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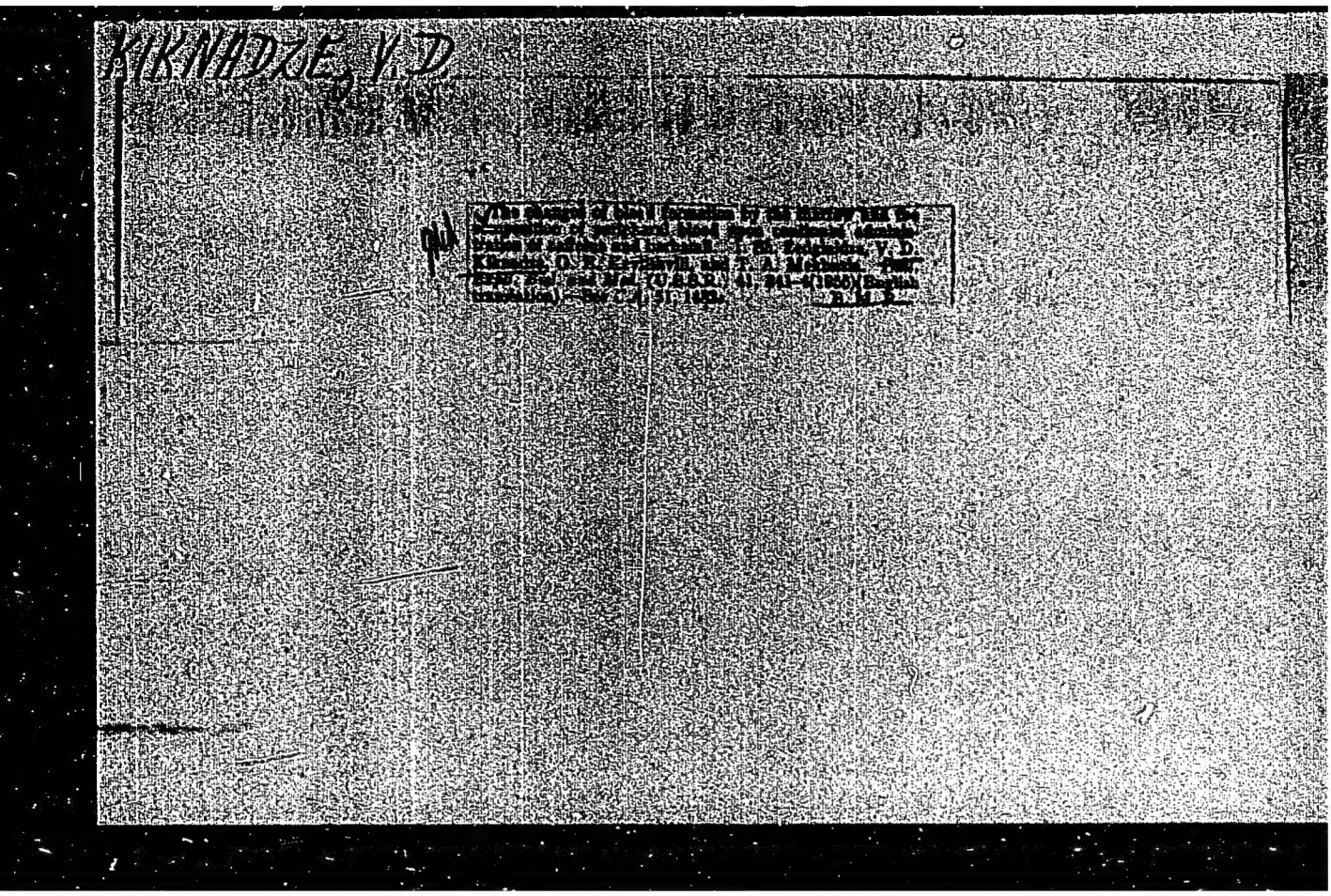

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KIKNADZE, V.D.; GEDEVANISHVILI, D.M., red.; SEMENSKAYA, Ye.M., prof., red.; KANDELAKI, D.P., red. izd-va; GLONTI, N.G., tekhn. red.

[Materials for an investigation of the influence of the liver on the processes of hemopoiesis] Materialy k izucheniiu vliianiia pecheni na protsessy krovetvoreniia. Tbilisi, Gos. izd-vo "Sabchota Sakartvelo," 1960. 77 p. (MIRA 14:7)

1. Chlen-korrespondent AN Gruzinskoy SSR (for Gedevanishvili)
(LIVER) (HEMOPOIETIC SYSTEM)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

USSR / Human and Animal Physiology. Digestion, Intestine. T

Abs Jour : Ref Zhur - Biol., No 15, 1958, No1 70293

Author : Kiknadze, V. S.; Mandzhgadze, B.; Dolidze, F. P.; Onikashvili, M. G.

Inst : Scientific Research Institute of Blood Transfusion, GSSR

Title : The Influence of Blood Transfusion and Blood Loss on the Secretory Function of the Small Intestine

Orig Pub : Sb. tr. N.-i. in-t perelivaniya krovi, Georgian SSR, 1957, Vol 5, 98-111

Abstract : In dogs with fistulae of the small intestine of the Thierry-Vella type, transfusions of homologous blood in normal conditions produced, within the first six hours, inhibition of secretion, and within the following day, an increase in secretion. With acute moderate blood loss, especially in the presence of anemia following blood-letting, the intestinal secretion diminished. Blood

Card 1/2

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CHAKHUNASHVILI, S.Yu.; ZEN'KO, N.I.; KIKNADZE, V.V.

Comparison of clinical roentgenological data after resection of the stomach in peptic ulcer. Khirurgiia 36 no.2:27-31 F '60.
(MIRA 13:12)

(STOMACH—SURGERY)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKNAVELIDZE, A.I., starshiy nauchnyy sotrudnik

Advanced monthly cash payments to collective farmers on collective tea farms. Biul. VNIICHiSK no.1:3-10 '57. (MIRA 15:5)
(Georgia--Collective farms--Income distribution)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKNAVELIDZE, A.I., starshiy nauchnyy sotrudnik

Public funds on the collective farms of the subtropical zone of western Georgia and their efficient use. Biul.VNIICHiSK no.2:3-26 '57. (MIRA 15:5)
(Georgia—Collective farms—Income distribution)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKNAVELIDZE, M. Ye.

Cand Biol Sci - (diss) "Distribution of Mycoderma yeasts in Georgia and their effect on the chemical composition of wine." Tbilisi, Pub. Georgian Agri Inst, 1961. 9 pp; with illustrations; (Ministry of Agriculture Georgian SSR, Central Scientific Research Inst of Horticulture, Viniculture, and Viticulture Georgian SSR); 180 copies; price: free; (KL, 10-61 sup, 210)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

MACHABELI, M.S.; DZHAPARIDZE, T.N.; BOKERIYA, R.I.; LABAKHUA, G.Sh.; BEZARASHVILI, L.G. ; KIKNAVELIDZE, N.D.

Indices of the blood coagulation system in healthy dogs. Soob. AN Gruz. SSR 30 no.5:663-666 My '63. (MIRA 16:11)

1. Institut eksperimental'noy i klinicheskoy khirurgii i gematologii AN GruzSSR, Tbilisi. Predstavleno akademikom K.D.Eristavi.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKNAVELIDZE, N.D.

Changes in the caogulating system of the blood during hepatitis. Soob. AN Gruz. SSR 27 no.6:775-778 D '61. (MIRA 15:2)

1. Institut eksperimental'noy i klinicheskoy khirurgii i gematologii AN Gruzinskoy SSR, Tbilisi. Predstavleno akademikom K.D.Eristavi.

(BLOOD—COAGULATION)
(LIVER—DISEASES)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKODZE, E.B.

Complex commutators of elements of groups. Usp.mat.nauk 12 no.4:301-303 Jl-Ag '57. (MIRA 10:10)
(Groups, Theory of)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

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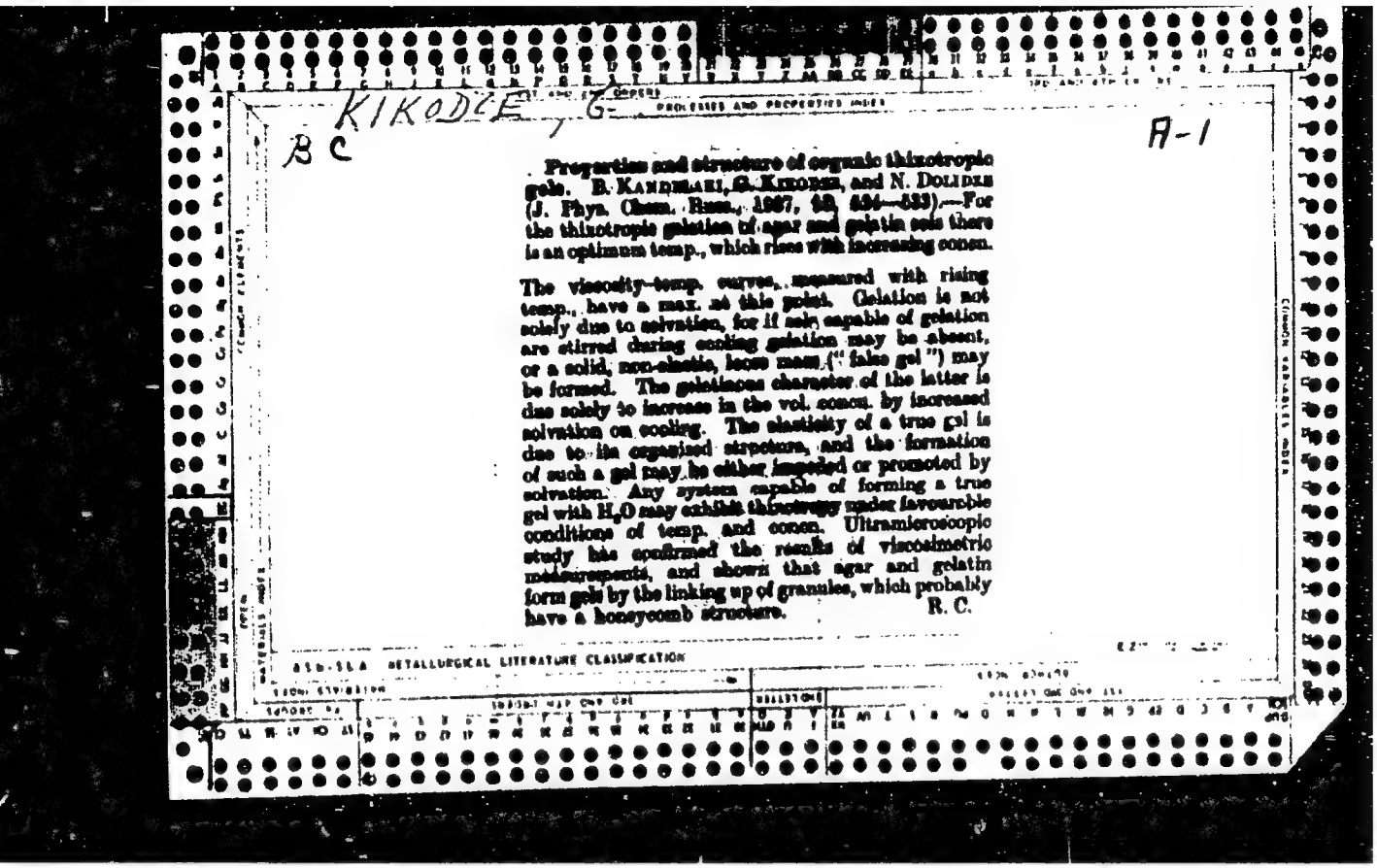

KIKODZE, G.

B C

A-1

Properties and structure of organic thixotropic gels. B. KANDELAKI, G. KIKODZE, and N. DOLIDZE (J. Phys. Chem. Russ., 1957, 31, 534—539).—For the thixotropic gelation of agar and gelatin sols there is an optimum temp., which rises with increasing concn.

The viscosity–temp. curves, measured with rising temp., have a max. at this point. Gelation is not solely due to solvation, for if sols capable of gelation are stirred during cooling gelation may be absent, or a solid, non-elastic, loose mass ("false gel") may be formed. The gelatinous character of the latter is due solely to increase in the vol. concn. by increased solvation on cooling. The elasticity of a true gel is due to its organized structure, and the formation of such a gel may be either impeded or promoted by solvation. Any system capable of forming a true gel with H_2O may exhibit thixotropy under favourable conditions of temp. and concn. Ultramicroscopic study has confirmed the results of viscosimetric measurements, and shown that agar and gelatin form gels by the linking up of granules, which probably have a honeycomb structure.

R. C.

A1b-5L4 METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

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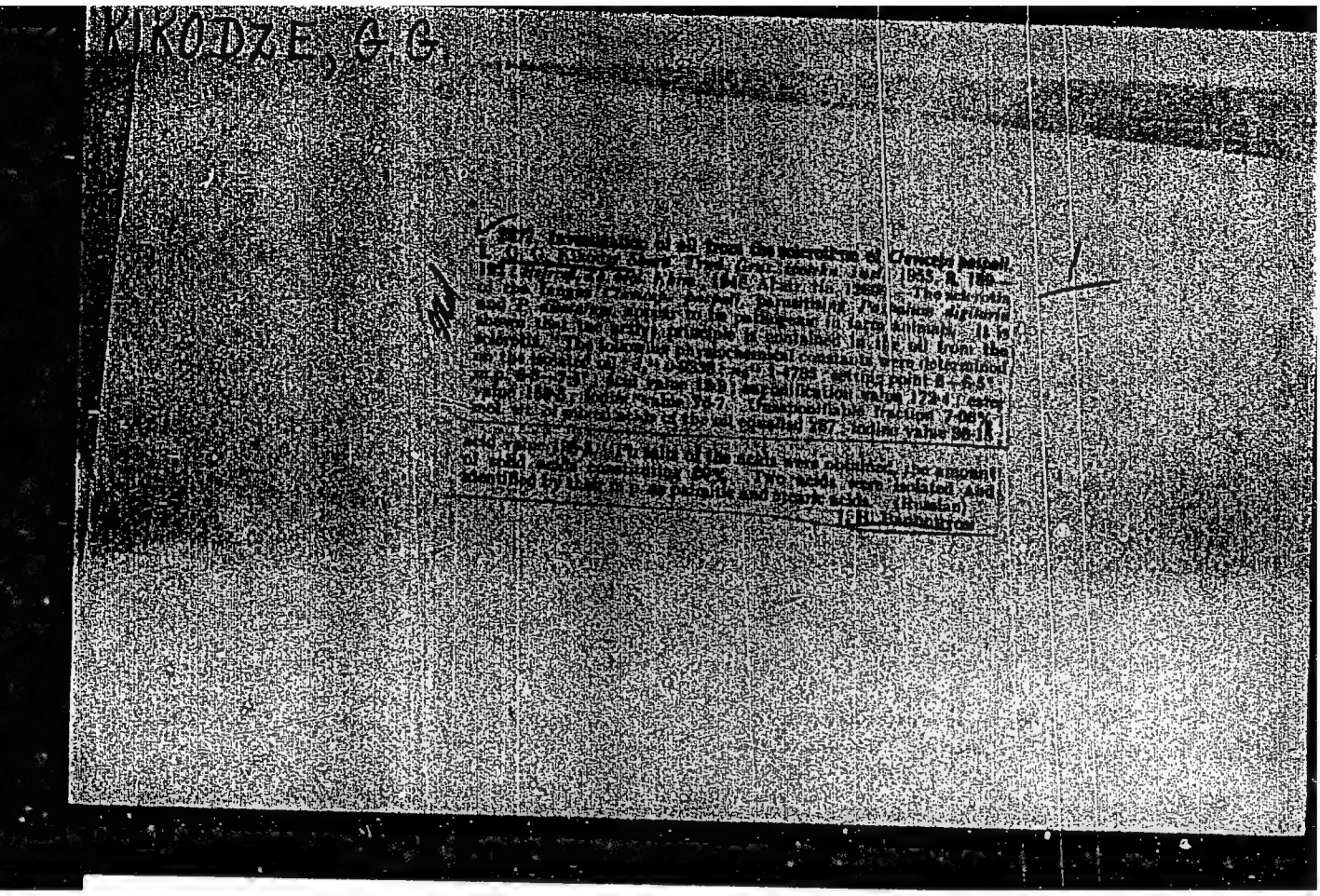

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

MELIKADZE, L.D.; KIKODZE, G.G.

Determination of side chains in cyclic hydrocarbons. Soob. AN Gruz. SSR 28 no.2:153-157 F '62. (MIRA 15:3)

1. Akademiya nauk Gruzinskoy SSR, Institut khimii imeni P. G. Melikishvili, Tbilisi. Predstavleno chlenom-korrespondentom Akademii G.V.TSitsishvili.

(Hydrocarbons--Analysis)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

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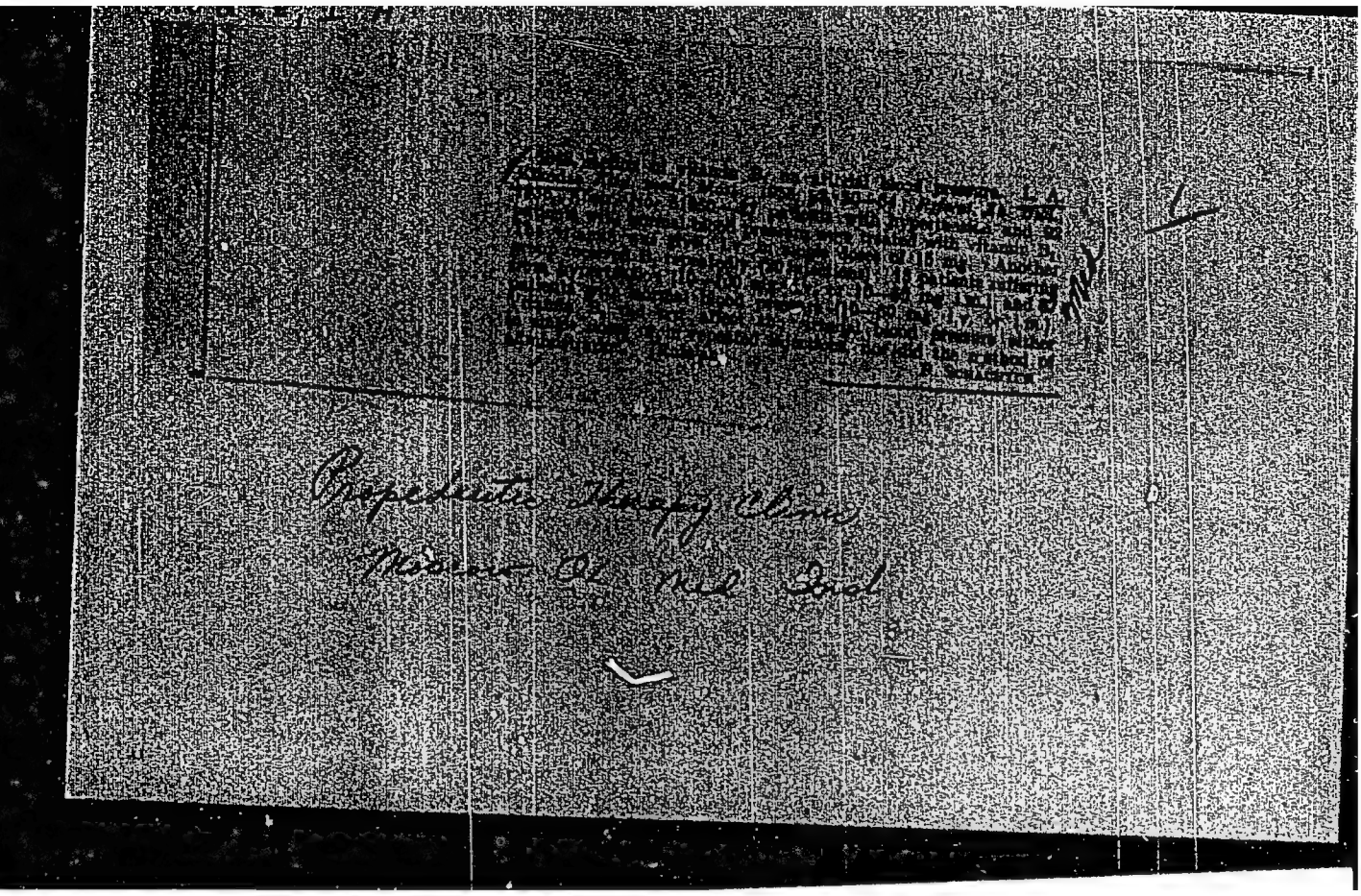

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKODZE, I.A.

Primary cancer of the gall bladder; clinical and antomical data. (MLRA 10:7)
Klin.med. 35 no.4:43-47 Ap '57.

1. Iz propedevticheskoy terapevticheskoy kliniki (dir. - chlen-korrespondent AMN SSSR prof. V.Kh.Vasilenko) I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova
(GALL BLADDER, neoplasms
clin. aspects)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

APROSINA, Z.G., kand. med. nauk; AFANAS'YEVA, K.A., kand. med. nauk; AKHREM-AKHREMOVICH, R.M., prof.; BLYUGER, A.F., doktor med. nauk; GONDAR', Z.A., prof.; VASILENKO, V.Kh., prof.; KIKODZE, I.A., kand. med. nauk; LINDENBRATEN, L.D., prof.; LOGINOV, A.S., kand. med. nauk; MANSUROV, Kh.Kh., prof.; NAZARETYAN, Ye.I., kand. med. nauk; NOGALLER, A.M., prof.; PLOTNIKOV, N.N., prof.; SEMENDYAYEVA, M.Ye., kand. med. nauk; TAREYEV, Ye.M., prof.; TAREYEV, I.Ye., kand. med. nauk; TER-GRIGOROVA, Ye.N., prof.; CHERNYSHEVA, Ye.V., kand. med. nauk; SHVARTS, L.G., prof.; MYASNIKOV, A.L., prof., zam. otv. red.; BOGOSLAVSKIY, V.A., red.; SEMENDYAYEVA, M.Ye., red.

[Multivolume manual on internal diseases] Mnogotomnoe rukovodstvo po vnutrennim boleznlam. Moskva, Meditsina. Vol.5. 1965. 724 p. (MIRA 18:9)

1. Deystvitel'nyy chlen AMN SSSR (for Tareyev, Ye.M., Vasilenko, Myasnikov).

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

GAMBASHIDZE, N.B., KIKODZE, N.L.; CHIKVAIDZE, V.N.

Effect of an extract of the medullar portion of the kidneys on some functions of the cardiovascular system. Soob. AN Gruz. SSR 30 no.1:85-90 Ja '63. (MIRA 17:1)

1. Institut klinicheskoy i eksperimental'noy kardiologii imeni M.D. TSinamdzgvarishvili AN Gruzinskoy SSR, Tbilisi. Predstavleno akademikom K.D. Eristavi.

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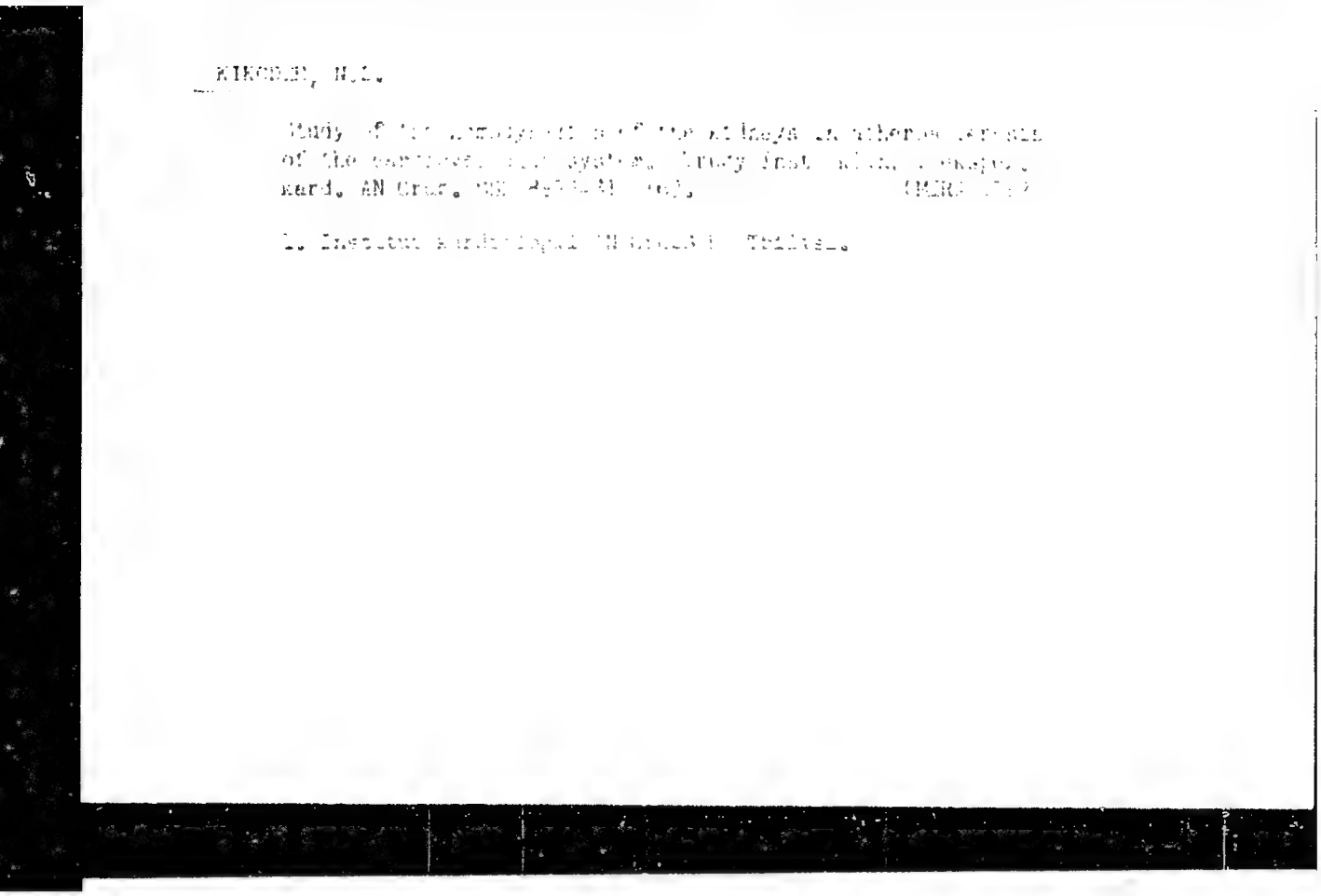

KIKODZE, N.L.

Study of the [illegible] of the kidneys in atherosclerosis of the [illegible] system. Trudy Inst. [illegible] Akad. AN Gruz. [illegible] (MIRA [illegible])

1. Institut [illegible] Tbilisi.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKODZE, N. L.

"The Functional Condition of the Kidneys in Hypertensive Diseases and Various Forms of Experimental Hypertension." Cand Med Sci, Tbilisi State Medical Inst, Tbilisi, 1954. (KL, No 1, Jan 55)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (12)
SO: Sum. No. 556, 24 Jun 55

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKODZE, S.L.; PAPAVA, T.I.; NARIMANISHVILI, E.Ya.

Dissemination of Escherichia coli in the [illegible].
Zhur. mikrobiol., epid. i immun. 42 no.[illegible]
[illegible]

1. Tbilisskaya gorodskaya dezinfektsionnaya stantsiya, Tbilisi
Oct. 31, 1964.

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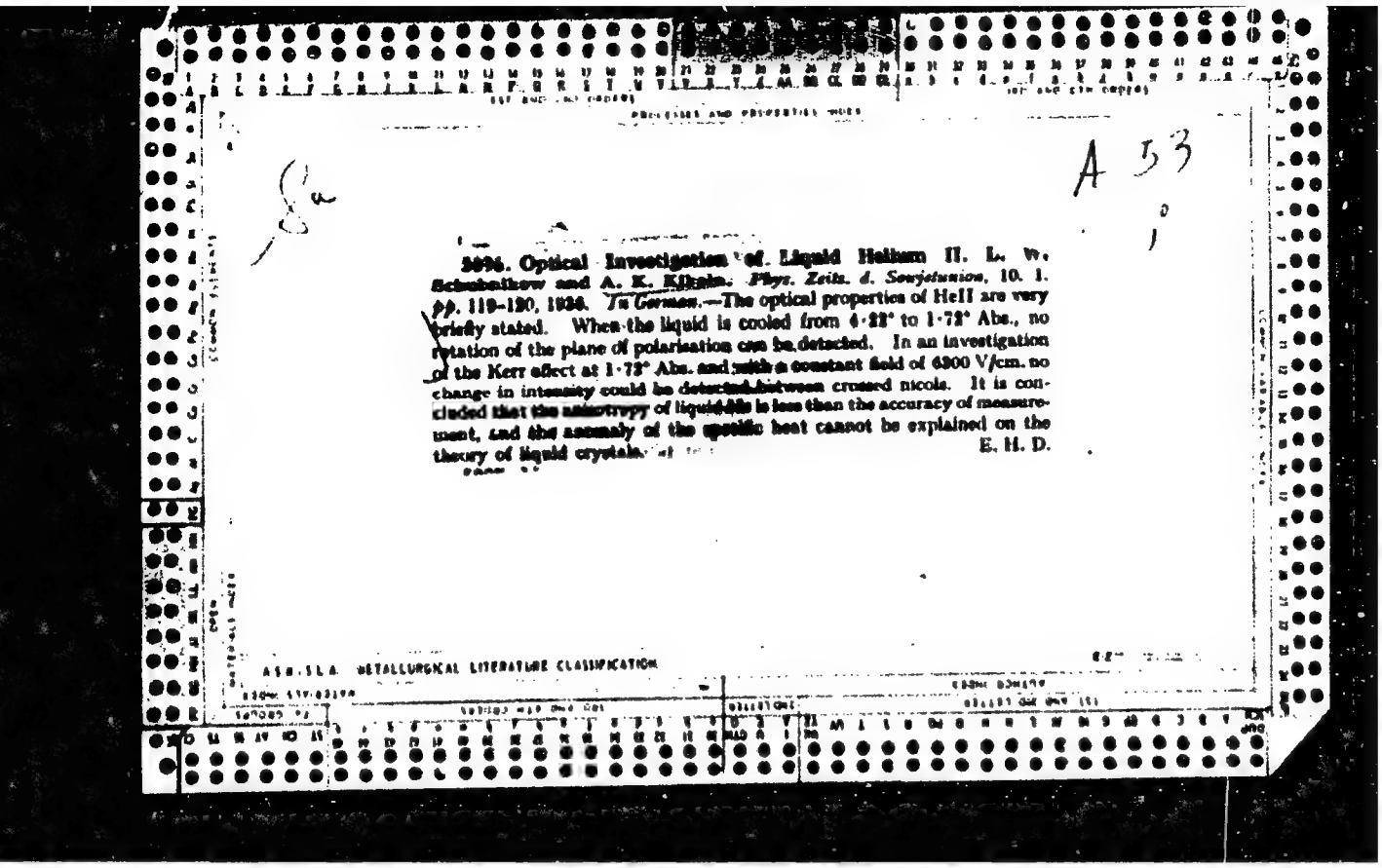

A 53

3096. **Optical Investigation of Liquid Helium II.** L. W. Schubnikow and A. K. Kikoin. *Phys. Zeits. d. Sowjetunion*, 10. 1. pp. 119–120, 1936. *In German.*—The optical properties of HeII are very briefly stated. When the liquid is cooled from 4·22° to 1·72° Abs., no rotation of the plane of polarisation can be detected. In an investigation of the Kerr effect at 1·73° Abs. and with a constant field of 6300 V/cm. no change in intensity could be detected between crossed nicols. It is concluded that the anisotropy of liquid He is less than the accuracy of measurement, and the anomaly of the specific heat cannot be explained on the theory of liquid crystals. E. H. D.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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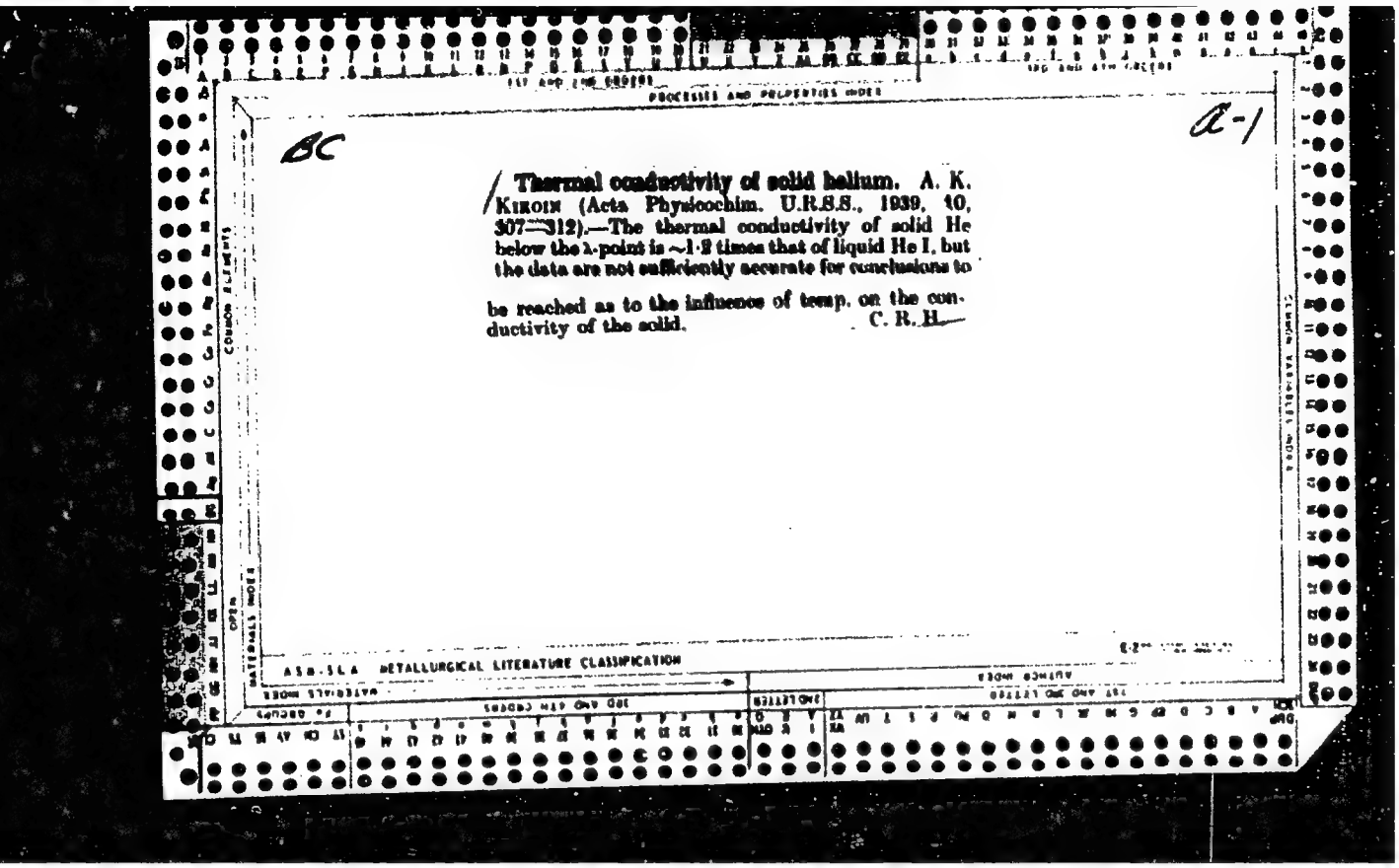


BC

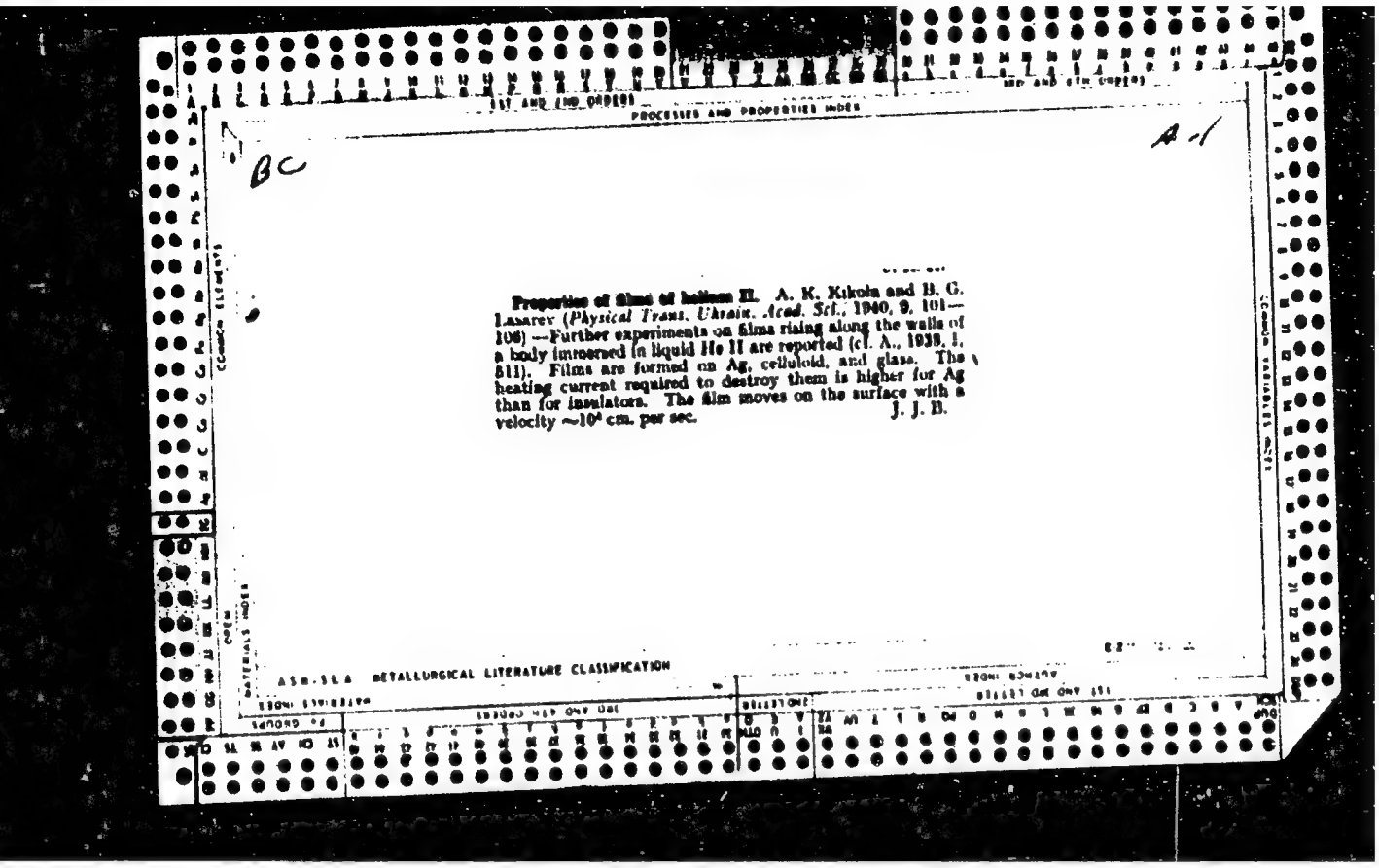
A-1

Thermal conductivity of solid helium. A. K. KIKOIN (Acta Physicochim. U.R.S.S., 1939, 10, 307—312).—The thermal conductivity of solid He below the λ-point is ~1·2 times that of liquid He I, but the data are not sufficiently accurate for conclusions to be reached as to the influence of temp. on the conductivity of the solid. C. R. H.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5



BC

A-1

Properties of films of helium II. A. K. Kikoin and B. G. Lasarev (*Physical Trans. Ukrain. Acad. Sci.*, 1940, 9, 101—108).—Further experiments on films rising along the walls of a body immersed in liquid He II are reported (cf. A., 1939, I, 811). Films are formed on Ag, celluloid, and glass. The heating current required to destroy them is higher for Ag than for insulators. The film moves on the surface with a velocity $\sim 10^4$ cm. per sec. J. J. B.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

PA 149T83

KIKOIN, A. K.

USSR/Physics - Ferromagnetics 21 Sep 49
Metals - Alloys, Chromium

"Investigation of Chromium-Tellurium Alloys," A. K. Kikoin, Inst Phys of Metals, Ural Affiliate, Acad Sci UbSR, 2 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 3, pp 481-482

Results of a study of specific heat at constant pressure (Cp) and resistance R of a particular alloy (chromium 44 atomic %, i.e., 24.3% Cr and 75.7% Te by weight) as functions of temperature. Sharp anomaly in Cp characteristic of all ferromagnetics at the Curie point was found at 60° C.

149T83

USSR/Physics - Ferromagnetics (Contd) 21 Sep 49

Temperature coefficient of resistance changed sharply at 60° C. This value for the Curie point conflicts with the 100° C found by Ochsenfeld in 1932 for certain Cr-Te alloys. Submitted by Acad S. I. Vavilov 13 Jul 49.

149T83

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

Kikoin, A.K.

CH

Thin films of intermetallic compounds. A. K. Kikoin and G. D. Fedorov. *Doklady Akad. Nauk S.S.S.R.* 92, 1163-5(1953).—Mg_3Sb_2, which should be a dielectric, is difficult to prep. stoichiometrically by fusion. Mg_3Bi_2, prepd. by simultaneous evapn. of the components on a glass plate *in vacuo*, in films approx. 1000 A. thick exhibited a narrow transparent strip sharply bounded and lying perpendicular to a line between the evapn. sources. The position of the strip corresponded to Mg_3Bi_2 by geometric calcn. The light passing through the strip was 25-9% of that passing through the glass alone. Curves of transmittance vs. distance across the strip showed a slight min. near the middle of the peak. This usually disappeared within several days, but remained for 1.5 months in one case. Prolonged exposure of the films to air produced a widening of the transparent strip. The Mg side of the strip acquired a stable yellow-brown color (transmitted light). Mg-As, Ca-Bi, and Ca-As produced transparent strips that widened on exposure to the air; the opaque part of the films acquired a bright color (especially for Mg-As). R. D. Misch

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

Kikoin A.K.

5

TRUDY INSTITUTA FIZIKI METALLOV, AKAD. NAUK, URALSKII, FILIAL, 1954, NO. 15 MG

Magnetocaloric effect in chromium-tellurium alloys by A. K. Kikoin (p. 70-75) - Measurements on Cr - Te alloys show that the magnetocaloric effect in these ferromagnetic alloys of non-ferromagnetic constituents has a similar temperature-and field strength-dependence to that in pure ferromagnetic materials. Peaks occur at Curie points, 34°C, two adjacent peaks between 50° and 60°C, and -45°C, for the 40% Te, 48.5% Te and 60% Te alloys investigated, respectively.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, A.K.; FEDOROV, G.D.

Semiconducting properties of magnesium-bismuth alloys. Izv. AN SSSR. Ser.fiz.20 no.12:1501-1508 D '56. (MLRA 10:3)

1. Kafedra fiziki Ural'skogo politekhnicheskogo instituta im S.M. Kirova. (Magnesium-bismuth alloys--Electric properties)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, A.K.

56-4-49/52

AUTHOR: LIKHTER, A.I., KIKOIN, A.K.

TITLE: The Influence of Exposure to Radiation by Neutrons on the Compressibility of Metals.
(Vliyaniye neytronnogo obluoheniya na szhimayemost' metallov. Russian).

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 4, pp 945 (U.S.S.R.)

ABSTRACT: First of all, the paper under review gives a brief summary of the present stage reached in the consideration of the above problem. According to the relevant investigations carried out so far, such exposure to radiation has either no effects or only very slight effects.

The authors of the paper under review investigated in a nuclear reactor the influence of the exposure to radiation by fast neutrons with respect to the compressibility of aluminum and magnesium. Because this compressibility is directly connected with the modulus of elasticity and with the modulus of shearing, and because the observations failed to detect any change of these moduli in the substances investigated, it is probable that the compressibility will not undergo any noticeable changes under influence of the exposure to radiation by neutrons. The cylindrical samples of a height of 6 mm and of a diameter of 6 mm were made of technologi-

Card 1/3

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56-4-49/52

The Influence of Exposure to Radiation by Neutrons on the Compressibility of Metals.

cally pure electrolytical material. The compressibility was investigated by means of a device for the measurement of the spatial compressibility employing the method of the shift of the piston. A description of this method will be given in another paper. The influence of friction was taken into account by recording the curves of the 'shift of the piston pressure' at decreasing and increasing pressure, and then computing their mean value. The measruements were carried out after having applied pressure to the sample up to a maximum pressure of about 15.000 kg/cm^2.

The samples were exposed to radiation in a nuclear reactor, and the total current of the neutrons amounted to $1.07.10^{19}$ n/cm^2. After exposure to radiation, the compressibility was measured under the same conditions as before the exposure to radiation. In this context the measurements, due to the remanent activity of the samples, could be carried out only three days after the exposure to radiation had been terminated. With respect to aluminum and magnesium, the curves of the 'shift of the piston pressure' are completely identical, both before and after the exposure to radiation, i.e. the exposure to radiation does not affect the com-

Card 2/3

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

137-58-6-13160

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 282 (USSR)

AUTHORS: Kikoin, A.K., Fedorov, G.D.

TITLE: Electric Conductivity of Mg-Bi Alloys (Elektroprovodnost' splavov sistemy Mg-Bi)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 72, pp 76-89

ABSTRACT: An investigation of the relationship between the resistance (R) of thin (1000-angstrom) films of Mg-Bi alloys and the composition; curves of log 1/R = f(1/T) were also obtained for a sample having a stoichiometric content of Mg_3Bi_2 (40 atom % Bi) and close to it. The film was made by Vekshinsky's technique of spraying onto a glass plate and was then cut into strips 1-1.5 mm wide. Each strip contained a concentration interval of ~ 2 atom % Bi. 20-25 strips of each film were examined and measurements taken in a vacuum. Curves of the relationship of the R of Mg and Bi to the thickness of the film are adduced showing the thickness at which anomalies in R and its temperature relationship disappear. A sharp maximum of R was observed close to the Mg_3Bi_2 composition of the alloy, at which the film becomes transparent. During fractional

Card 1/2

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137-58-6-13160

Electric Conductivity of Mg-Bi Alloys

evaporation of the metal, a maximum R appears after annealing at 230°C, but its magnitude is much lower. To establish the effect of air, measurements were taken with protective SiO coating on surface of alloys, but the character of curve did not change. The temperature relationship of R demonstrates that alloys covering a broad variety of compositions approaching Mg_3Bi_2 possess semiconductive properties and impurity conductivity. An evaluation of activation energy ($\sim$ 0.06 ev) was made.

L.M.

1. Bismuth--Magnesium films--Electrical properties 2. Thin films--Preparation

Card 2/2

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137-58-6-13161

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 283 (USSR)

AUTHORS: Kikoin, A.K., Fedorov, G.D.

TITLE. Thermoelectromotive Forces in Mg-Bi Alloys (Termoelektrodvizhushchiye sily v splavakh sistemy Mg-Bi)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 72, pp 90-97

ABSTRACT: Thermoelectromotive forces E of alloys of Mg-Bi group were studied using specimens produced by Vekshinskiy's technique. E in relation to Cu was measured on films of variable composition. A coated glass plate was fastened on a special table, the displacement of which was controlled by a micrometric screw and was measured with an accuracy of up to 0.2 mm. Two Cu thermoprobes were lowered onto the plate surface. The pointed ends of the probes were semi-spheroidal in shape with ~1 mm diam. A difference in temperature was produced between the probes by heaters consisting of nickel wire which was wound on the cylindrical part of the probe and insulated on the outside with water glass. E was measured by a PPTV-1 potentiometer to which were attached the Cu wires of a Cu-constantan thermocouple. It was established that E of pure

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Thermoelectromotive Forces in Mg-Bi Alloys

Mg and Bi films having a thickness $\ell > 500$ angstrom does not depend on ℓ and has the same value as for thick material. The Mg-Bi films studied had $\ell \sim 1000$ angstrom; therefore, it is assumed that thin-film effects should not play a significant role. In Mg-Bi alloys a sharply defined maximum of E was observed, which matches the maxima of resistance and transparency (ref. RzhMet, 1958, Nr 6, abstract 13160) and corresponds to the composition of Mg_3Bi_2. All this proves that Mg_3Bi_2 is an impurity semiconductor. There are anomalies in the behavior of E and in the curves of transparency and resistivity in the range of concentrations corresponding to 50 atom % Bi, which may be connected with the existence of an intermetallic compound MgBi. Bibliography: 13 references.

S.S.

1. Bismuth-Magnesium films--Electrical properties 2. Bismuth-Magnesium films --Temperature factors 3. Bismuth-Magnesium films--Test results

Card 2/2

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KIKOIN, A.K.

Determination of [illegible] magnitudes. Filos. vop. [illegible] i Khim. no. 1:55-61 '[illegible]. (MIRA 14:2)

(Physics--Philosophy)

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

9 (2), 28 (2) SOV/115-59-10-8/29

AUTHORS: Grazhdankina, N.P., Domanskaya, L.I. and Kikoin, A.K.

TITLE: Measuring the High Pressure Chamber Temperature With a Thermal Resistor

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 10, pp 18-21 (USSR)

ABSTRACT: The author studied the possibility of replacing the thermo-couples by thermal resistors to measure the temperature in high pressure chambers. As the use of thermocouples requires very extensive research to calculate the effect of very high pressures on their precision, the author tentatively investigated the possibility of using Soviet produced thermal resistors of the MMT-4 type (copper-manganese) (Fig 1). The investigation of the influence of high pressure on the precision of thermal resistors at 5,000 kg/sq cm and 8,000 kg/sq cm pressure was made in two high pressure chambers. In the first chamber the temperature was 15.6, 17.3, 18.5, 24.4, 33.2 and 35.2°C at a pressure up to 5,000 kg/sq cm; in the second chamber the temperature was 17.4°C

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Measuring the High Pressure Chamber Temperature With a Thermal Resistor

at a pressure of up to 8,000 kg/sq cm. The resistance of the resistors was measured with a bridge having an error possibility of up to 0.5 ohm. Graphs 2,3 and 4 show the results of these tests. A table showing the corrections which must be introduced in the temperature indicated by a thermal resistor is given in the article. The table shows that a resistor is no more precise than a thermocouple. The high pressure chambers were constructed according to the plans prepared by M.I. Oleynik and V.A. Stepanov. There are 3 graphs, 1 diagram, 1 table and 5 references 1 of which is Soviet, 2 French, 1 American and 1 Canadian.

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

S/058/62/000/003/012/092
A061/A101

AUTHOR: Kikoin, A. K.

TITLE: Problem of the determination of physical quantities

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1962, 21, abstract 3A211 (Sb. "Filos. vopr. fiz. i khimii", Sverdlovsk, 1959, 55-61)

TEXT: The variety of correlations and relationships in natural phenomena makes it possible to describe them in various ways, using different selected concepts and quantities. Therefore, it may be stated that there is a certain liberty of choice in the determination of physical quantities. In nature, only the relationships between quantities (objective laws), not the quantities themselves, are clearly defined. In this connection, many critical remarks of a philosophical character addressed to L. I. Mandel'shtam on the occasion of his lecture on the theory of relativity appear to be unfounded.

Yu. Molchanov

[Abstracter's note: Complete translation]

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, A.K.; AFANAS'YEV, B.P.; BURESH, G.V.; BUZYNOV, A.Ye.

Effect of high-energy gamma rays on the wettability of natural minerals. Zhur. fiz. khim. 36 no.1:237 Ja '62. (MIRA 16:8)

1. Institut fiziki metallov AN SSSR.
(Minerals) (Wetting) (Gamma rays)

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KIKOIN, A. K.

90

SOV/6176

PHASE I BOOK EXPLOITATION

Konobeyevskiy, S. T., Corresponding Member, Academy of Sciences USSR, Resp. Ed.

Deystviye vadernykh izlucheniy na materialy (The Effect of Nuclear Radiation on Materials). Moscow, Izd-vo AN SSSR, 1962. 383 p. Errata slip inserted. 4000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye tekhnicheskikh nauk; Otdeleniye fiziko-matematicheskikh nauk.

Resp. Ed.: S. T. Konobeyevskiy; Deputy Resp. Ed.: S. A. Adasinskiy; Editorial Board: P. L. Gruzin, G. V. Kurdyumov, B. M. Levitskiy, V. S. Lyashenko (Deceased), Yu. A. Martynyuk, Yu. I. Pokrovskiy, and N. F. Pravdyuk; Ed. of Publishing House: M. G. Makarenko; Tech. Eds: T. V. Polyakova and I. N. Dorokhina.

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The Effect of Nuclear Radiation (Cont.)

PURPOSE: This book is intended for personnel concerned with nuclear materials.

COVERAGE: This is a collection of papers presented at the Moscow Conference on the Effect of Nuclear Radiation on Materials, held December 6-10, 1960. The material reflects certain trends in the work being conducted in the Soviet scientific research orginization. Some of the papers are devoted to the experimental study of the effect of neutron irradiation on reactor materials (steel, ferrous alloys, molybdenum, avial, graphite, and nichromes). Others deal with the theory of neutron irradiation effects (physico-chemical transformations, relaxation of internal stresses, internal friction) and changes in the structure and properties of various crystals. Special attention is given to the effect of intense γ-radiation on the electrical, magnetic, and optical properties of metals, dielectrics, and semiconductors.

Card 2/14

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, Isaak Konstantinovich; KIKOIN, Abram Konstantinovich; MARGULIS, U.Ya., red.; AKSEL'ROD, I.Sh., tekhn. red.

[Molecular physics] Molekuliarnaia fizika. Moskva, Fizmatgiz, 1963. 500 p. (MIRA 17:2)

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L 3413-66 EWT(m)/EPF(c)/EPF(n)-2/EWP(t)/EWP(b) JD/GG/GS

ACCESSION NR: AT5023814 UR/0000/62/000/000/0329/0331

23
B+1

AUTHOR: Titov, P. P.; Kikoin, A. K.; Buzynov, A. Ye.

TITLE: Stimulating effect of x ray and gamma irradiation on the flotation process

SOURCE: Soveshchaniye po probleme Deystviye yadernykh izlucheniy na materialy. Moscow, 1960. Deystviye yadernykh izlucheniy na materialy (The effect of nuclear radiation on materials); doklady soveshchaniya. Moscow, Izd-vo AN SSSR, 1962, 329-331

TOPIC TAGS: gamma irradiation, flotation, irradiation effect, x ray irradiation, pyrite, quartz, mineral coal

ABSTRACT: In the last few years, the authors have conducted experiments on flotation of monominerals (rutile, quartz, feldspar, scheelite, malachite, pyrochlore, etc.), ores, and coals irradiated with x rays, Co^{60} γ rays, and betatron radiation with 22 MEV maximum energy of γ quanta. The ground material prepared for flotation was irradiated for various periods of time, after which flotation was carried out. In almost all cases, the irradiation had a stimulating effect on the flotation process, increasing its rate and improving its characteristics. Among the few substances whose flotation was adversely

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affected were quartz and feldspar. During the flotation Co^{60} radiation was very effective in increasing the rate of the process even though the dose was very low. The radiation may change the adsorption of gas on the solid-gas interface as a result of a change in the surface charge on the solid particles of the floated material. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 18Aug62 ENCL: 00 SUB CODE: NP, MT

NO REF SOV: 005 OTHER: 000

Card 2/2 kd

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

ACC NR: AP6022019 SOURCE CODE: UR/0120/66/000/003/0165/0167

AUTHOR: Kikoin, A. K.; Buzynov, A. Ye.; Yurchikov, Ye. Ye.

ORG: Institute of the Physics of Metals, AN SSSR, Sverdlovsk (Institut fiziki metallor AN SSSR)

TITLE: A vacuum device with a diffusion pump

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1966, 165-167

TOPIC TAGS: vacuum, vacuum chamber, vacuum pump, vacuum technology, diffusion pump

ABSTRACT: A simple vacuum device capable of producing in its evaporating chamber a vacuum of $\sim 5 \cdot 10^{-8}$ torr, which is high enough for thin film technology, is described. Usually the possibility of obtaining such a vacuum depends on the speed with which working pressure is restored in the chamber after dismantling and parts replacement. Because of this every attempt to obtain a metallic thin film takes a long time and, if frequent replacements of the evaporator, or other parts of the vacuum device are required, then major difficulties are encountered. In the vacuum device discussed a diffusion pump, mounted directly in the evaporating chamber, is utilized which makes it possible to obtain within a short time a pressure of $2 \cdot 10^{-7}$ and a vacuum of $5 \cdot 10^{-8}$ torr. The evaporating chamber is in the form of a 3ϕ250 mm cylinder with a volume of 15 l mounted on a steel plate. The chamber is evacuated through an opening in the center of the steel plate by the RVN-10 preevacuation pump and by the TsVL-100 oil-

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ACC NR: AP6022019

vapor pump. High vacuum speed made possible by the diffusion pump permits the use of ordinary pressurizing and vacuum sanitation methods. The speed is such that during the evaporation with insignificant gas releases the pressure in the chamber increases by less than half an order of magnitude. Orig. art. has: 1 figure.

SUB CODE: 20,13/ SUBM DATE: 12Jun65/ ORIG REF: 001

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, I. K.; DORFMAN, J.

Zeitschrift für Physik, 1929, Vol 54, pp 289-296, Role of Conductivity Electrons in Ferromagnetism.

"The fact that the cond. electron plays the part of the elementary magnet in ferromagnetic processes has led to the possibility of calcn. of the magnetic spin moment of the cond. electron, which is found, within an accuracy of 5%, to be a Bohr magneton."

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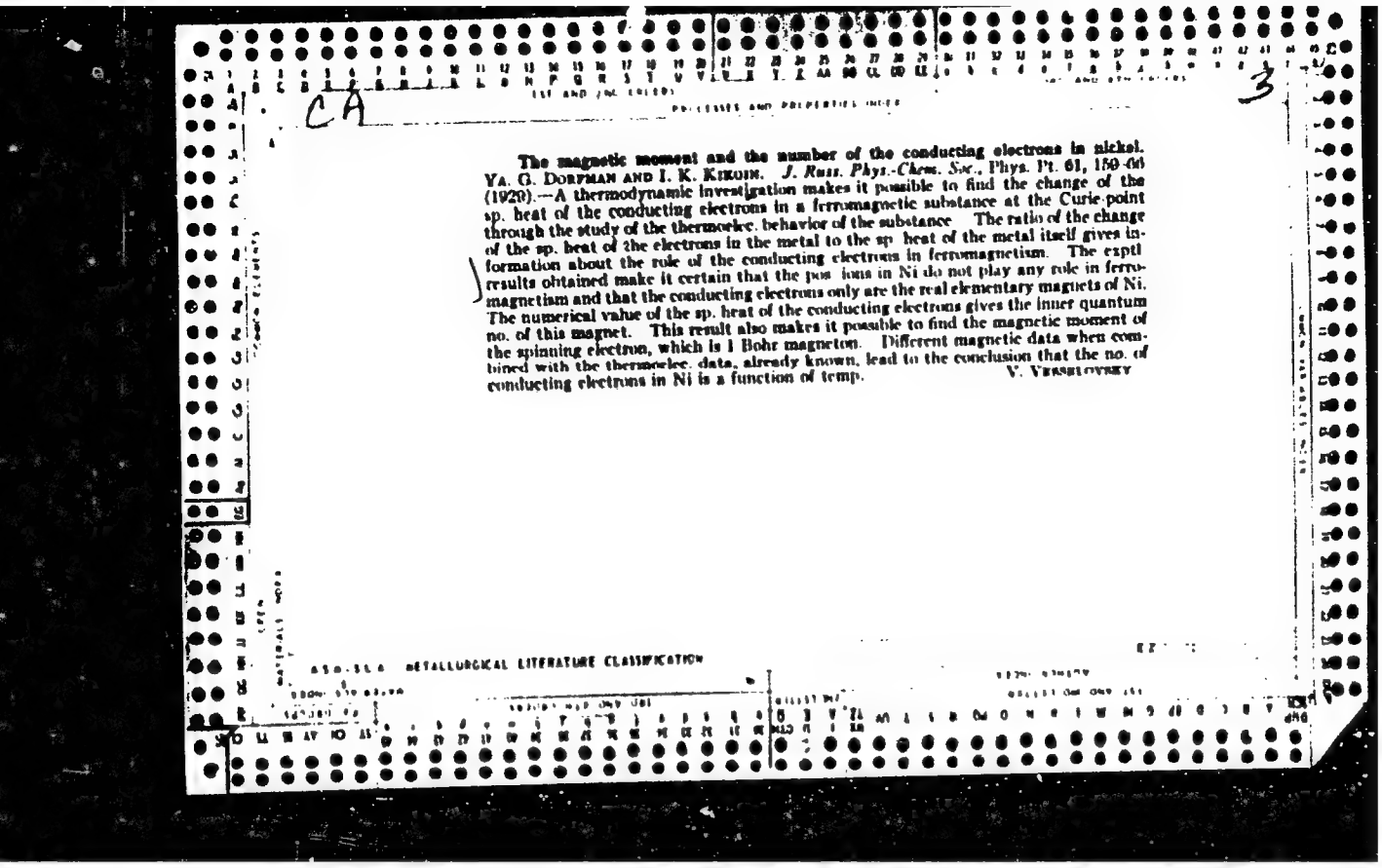

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The magnetic moment and the number of the conducting electrons in nickel. YA. G. DORFMAN AND I. K. KIKOIN. *J. Russ. Phys.-Chem. Soc.*, Phys. Pt. 61, 159-66 (1929).—A thermodynamic investigation makes it possible to find the change of the sp. heat of the conducting electrons in a ferromagnetic substance at the Curie point through the study of the thermoelec. behavior of the substance. The ratio of the change of the sp. heat of the electrons in the metal to the sp. heat of the metal itself gives information about the role of the conducting electrons in ferromagnetism. The exptl. results obtained make it certain that the pos. ions in Ni do not play any role in ferromagnetism and that the conducting electrons only are the real elementary magnets of Ni. The numerical value of the sp. heat of the conducting electrons gives the inner quantum no. of this magnet. This result also makes it possible to find the magnetic moment of the spinning electron, which is 1 Bohr magneton. Different magnetic data when combined with the thermoelec. data, already known, lead to the conclusion that the no. of conducting electrons in Ni is a function of temp.

V. VESSELOVSKY

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, I. K., FAKIDOV, I.

Zeitschrift für Physik, 1932, Vol 75, p 679, Change of Resistance of Liquid Metals in a Magnetic Field.

"The elec. resistance of the liquid alloy KNa is invested at room temp. in magnetic fields up to 13,000 gausses. The change in resistance follows a linear law even in weak fields."

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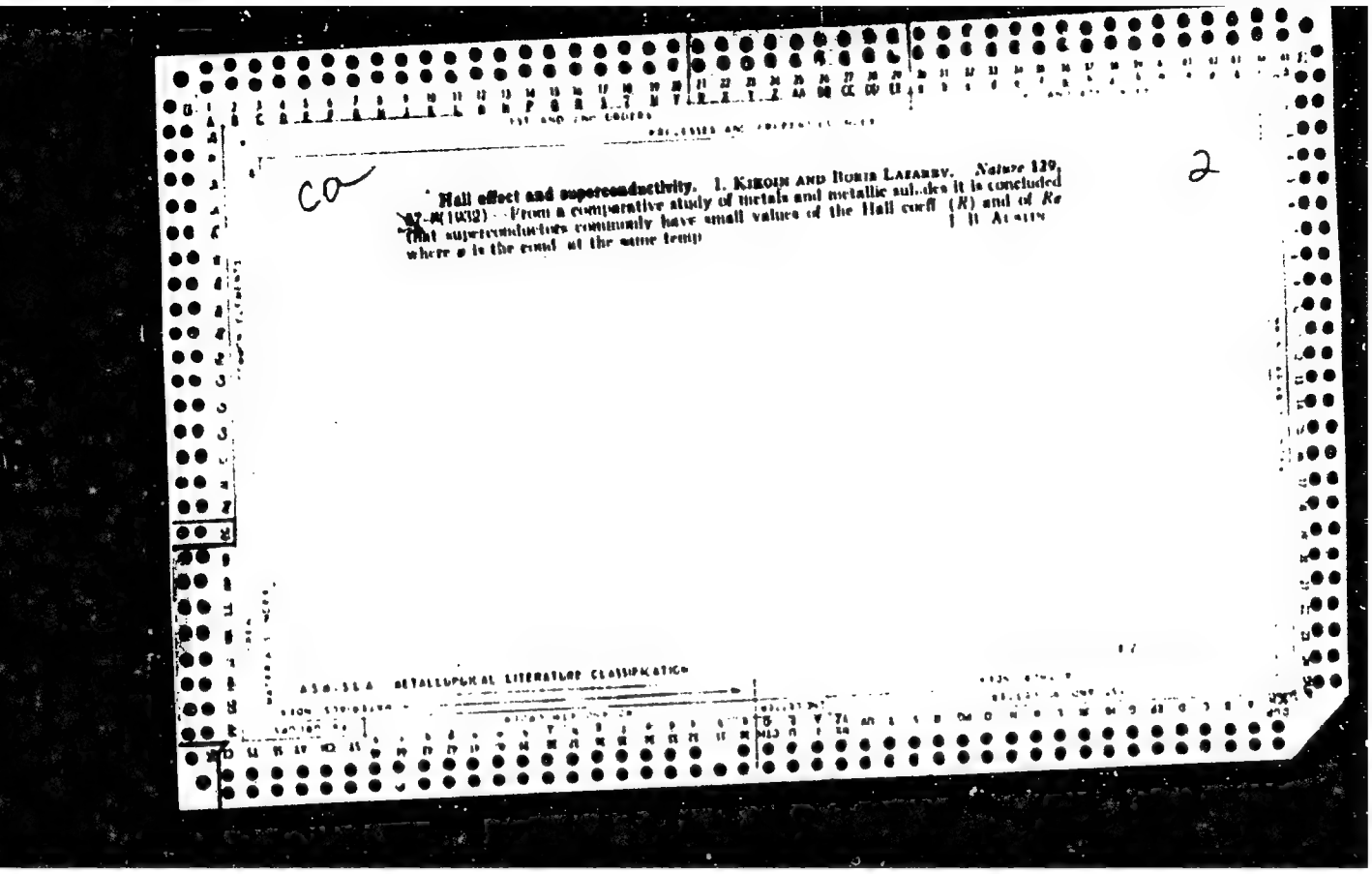

Co

2

Hall effect and superconductivity. I. Kikoin and Boris Lazarev. *Nature* 139, 87-8(1932).—From a comparative study of metals and metallic sulfides it is concluded that superconductors commonly have small values of the Hall coeff. (R) and of $R\sigma$ where σ is the cond. at the same temp.

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

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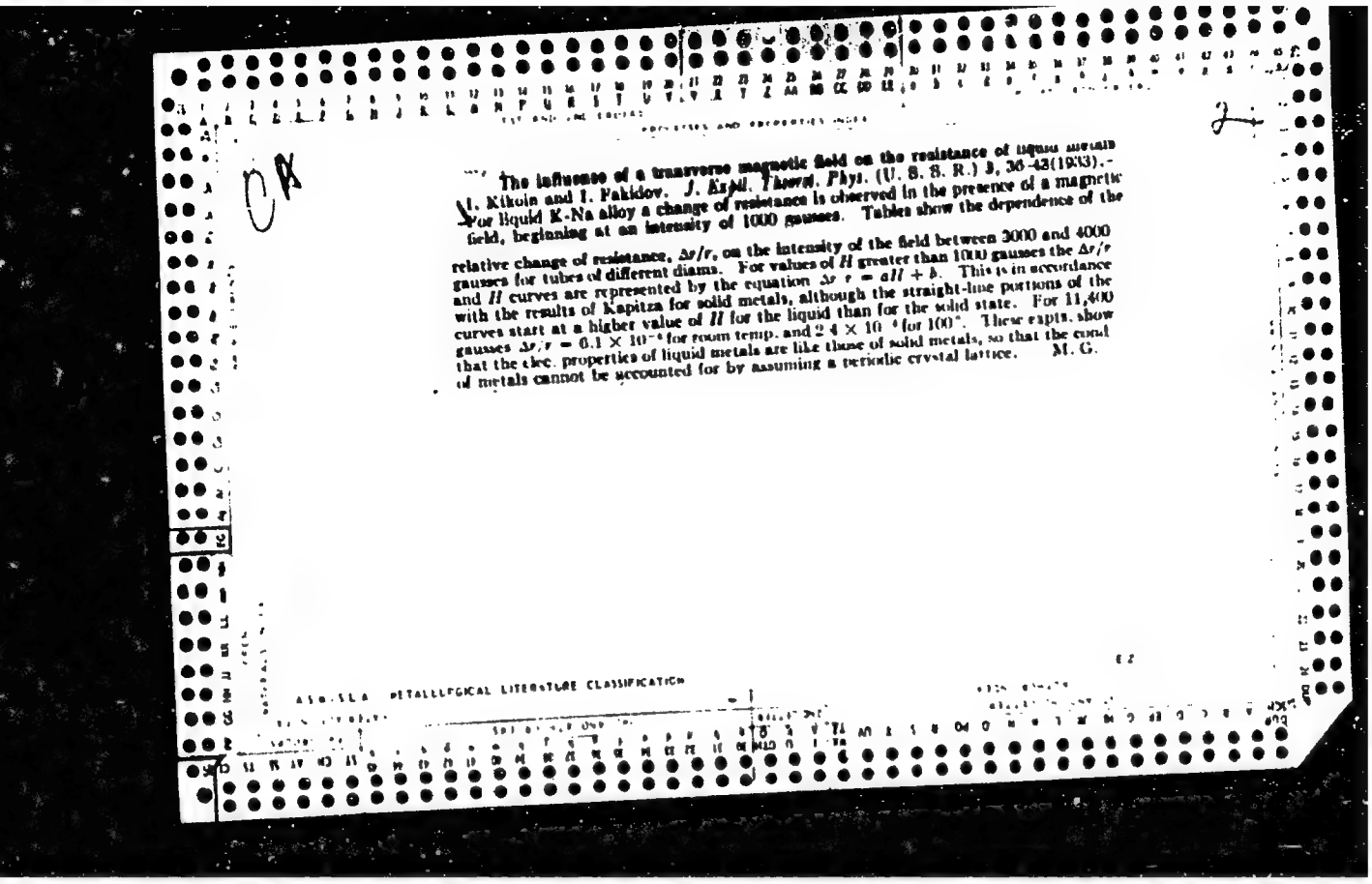

The influence of a transverse magnetic field on the resistance of liquid metals. I. Kikoin and I. Pakidov. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 3, 36-43(1933).—For liquid K-Na alloy a change of resistance is observed in the presence of a magnetic field, beginning at an intensity of 1000 gausses. Tables show the dependence of the relative change of resistance, $\Delta r/r$, on the intensity of the field between 3000 and 4000 gausses for tubes of different diams. For values of H greater than 1000 gausses the $\Delta r/r$ and H curves are represented by the equation $\Delta r/r = aH + b$. This is in accordance with the results of Kapitza for solid metals, although the straight-line portions of the curves start at a higher value of H for the liquid than for the solid state. For 11,400 gausses $\Delta r/r = 0.1 \times 10^{-4}$ for room temp. and 2.4×10^{-4} for 100°. These expts. show that the elec. properties of liquid metals are like those of solid metals, so that the conduction of metals cannot be accounted for by assuming a periodic crystal lattice. M. G.

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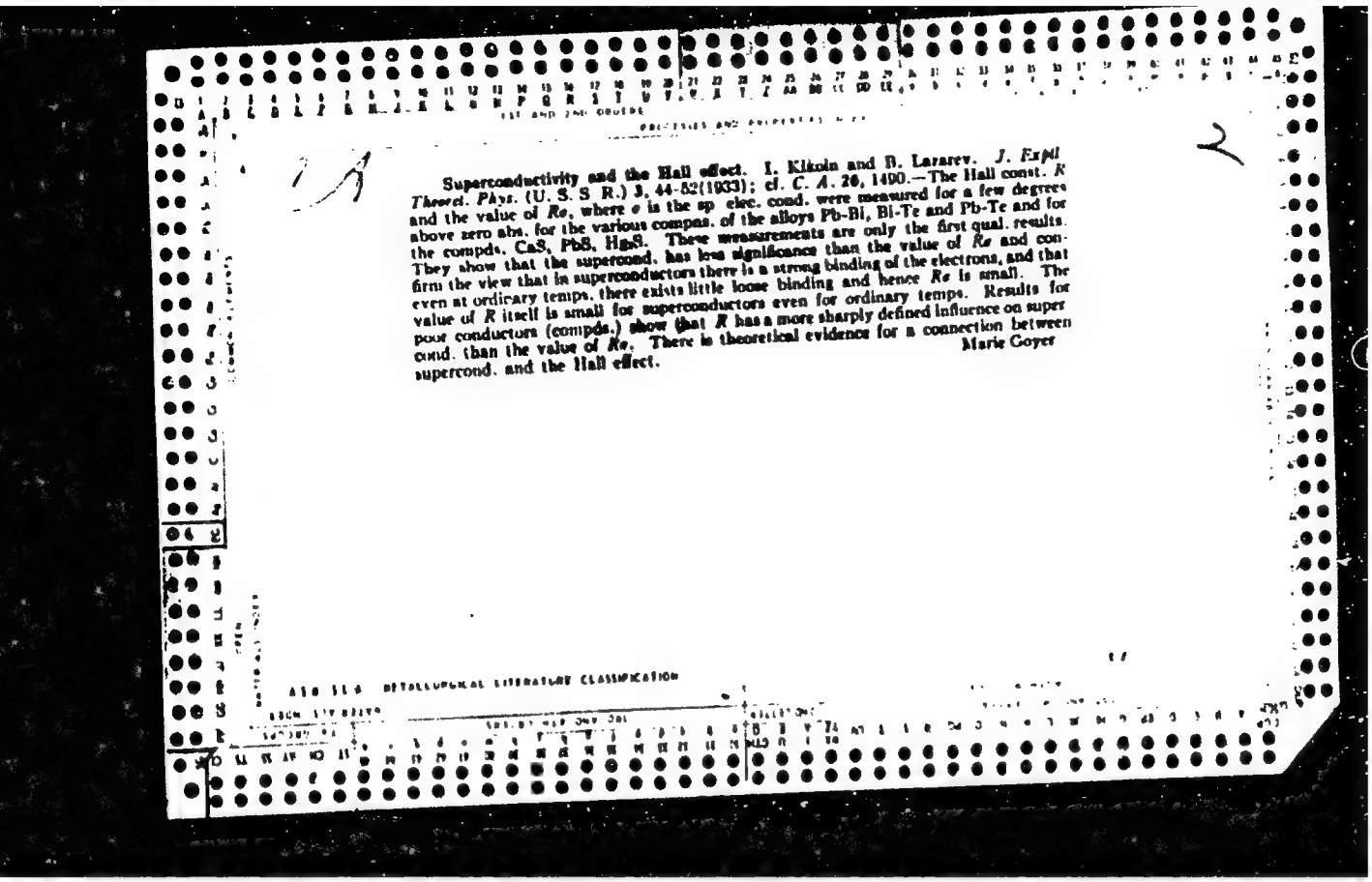

Superconductivity and the Hall effect. I. Kikoin and B. Lazarev. *J. Exptl Theoret. Phys.* (U. S. S. R.) **3**, 44-52(1933); cf. *C. A.* **28**, 1490.—The Hall const. *R* and the value of $R\sigma$, where σ is the sp. elec. cond. were measured for a few degrees above zero abs. for the various compns. of the alloys Pb-Bi, Bi-Te and Pb-Te and for the compds. CaS, PbS, HgS. These measurements are only the first qual. results. They show that the supercond. has less significance than the value of $R\sigma$ and confirm the view that in superconductors there is a strong binding of the electrons, and that even at ordinary temps. there exists little loose binding and hence $R\sigma$ is small. The value of R itself is small for superconductors even for ordinary temps. Results for poor conductors (compds.) show that R has a more sharply defined influence on super cond. than the value of $R\sigma$. There is theoretical evidence for a connection between supercond. and the Hall effect.

Marie Goyer

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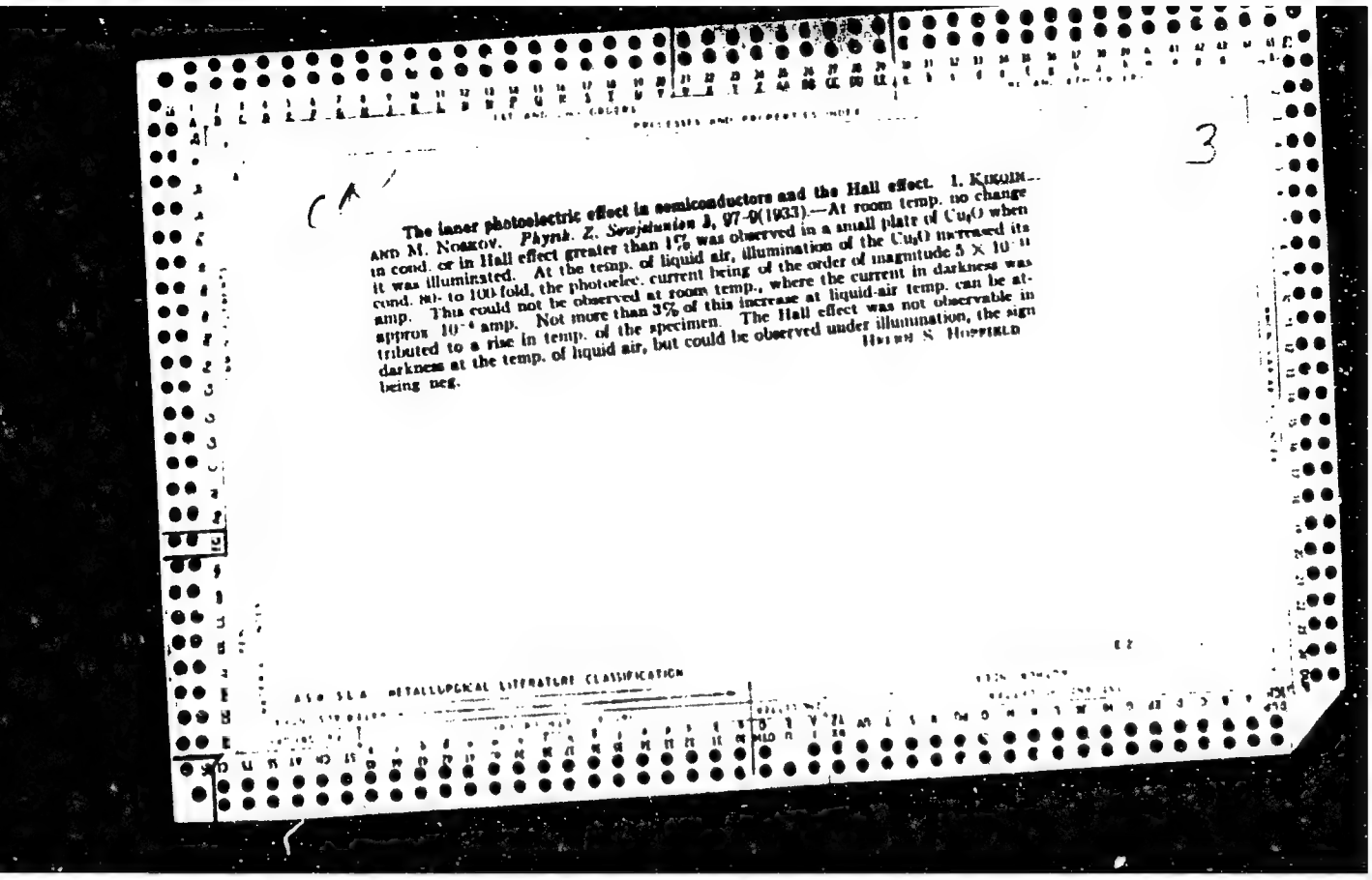

The laser photoelectric effect in semiconductors and the Hall effect. I. Kikoin and M. Noskov. *Physik. Z. Sowjetunion* 3, 97–9(1933).—At room temp. no change in cond. or in Hall effect greater than 1% was observed in a small plate of Cu_2O when it was illuminated. At the temp. of liquid air, illumination of the Cu_2O increased its cond. 80- to 100-fold, the photoelec. current being of the order of magnitude 5×10^{-11} amp. This could not be observed at room temp., where the current in darkness was approx 10^{-6} amp. Not more than 3% of this increase at liquid-air temp. can be attributed to a rise in temp. of the specimen. The Hall effect was not observable in darkness at the temp. of liquid air, but could be observed under illumination, the sign being neg.

Hilton S. Hopfield

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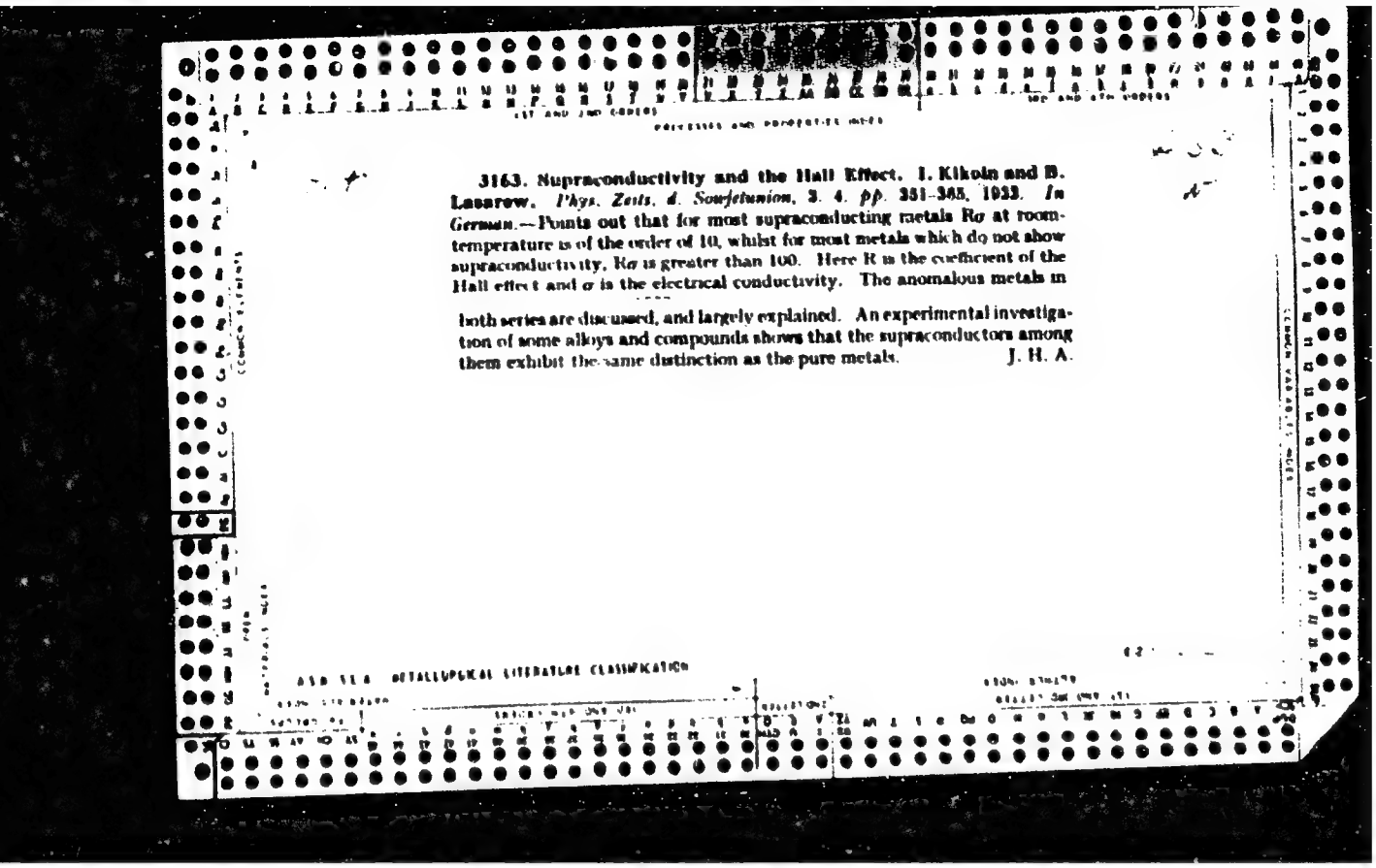

3163. **Supraconductivity and the Hall Effect.** I. Kikoin and B. Lasarew. *Phys. Zeits. d. Sowjetunion*, 3. 4. *pp.* 351–365, 1933. *In German.*—Points out that for most supraconducting metals $R\sigma$ at room-temperature is of the order of 10, whilst for most metals which do not show supraconductivity, $R\sigma$ is greater than 100. Here R is the coefficient of the Hall effect and σ is the electrical conductivity. The anomalous metals in both series are discussed, and largely explained. An experimental investigation of some alloys and compounds shows that the supraconductors among them exhibit the same distinction as the pure metals. J. H. A.

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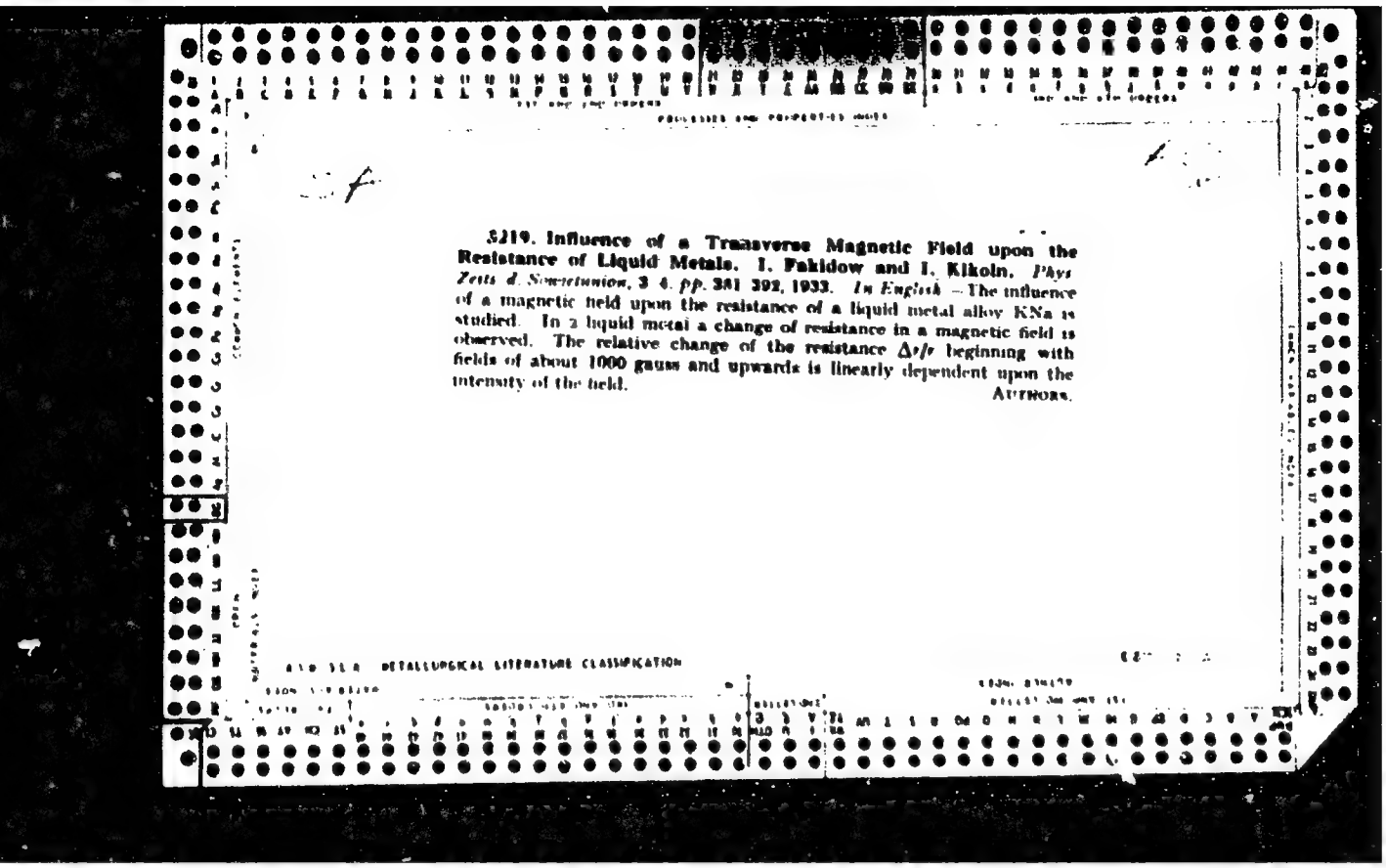

5219. **Influence of a Transverse Magnetic Field upon the Resistance of Liquid Metals.** I. Pakidow and I. Kikoin. *Phys Zeits d. Sowjetunion*, 3 4. *pp.* 381 392, 1933. *In English.* — The influence of a magnetic field upon the resistance of a liquid metal alloy KNa is studied. In a liquid metal a change of resistance in a magnetic field is observed. The relative change of the resistance $\Delta r/r$ beginning with fields of about 1000 gauss and upwards is linearly dependent upon the intensity of the field.

AUTHORS.

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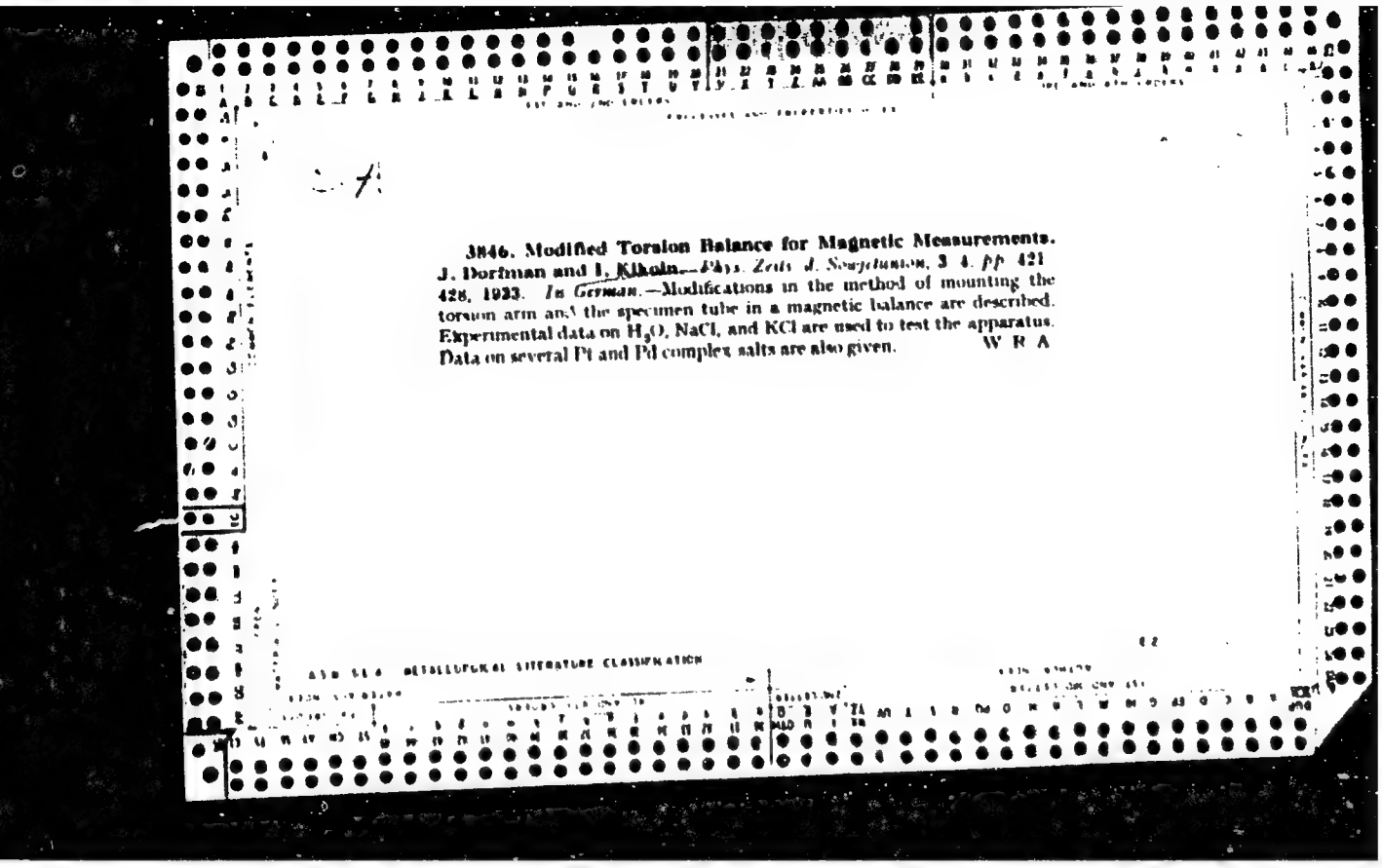

3846. **Modified Torsion Balance for Magnetic Measurements.** J. Dorfman and I. Kikoin.—*Phys. Zeits. d. Sowjetunion*, 3 4. *pp.* 421 428, 1933. *In German.*—Modifications in the method of mounting the torsion arm and the specimen tube in a magnetic balance are described. Experimental data on H_2O, NaCl, and KCl are used to test the apparatus. Data on several Pt and Pd complex salts are also given. W R A

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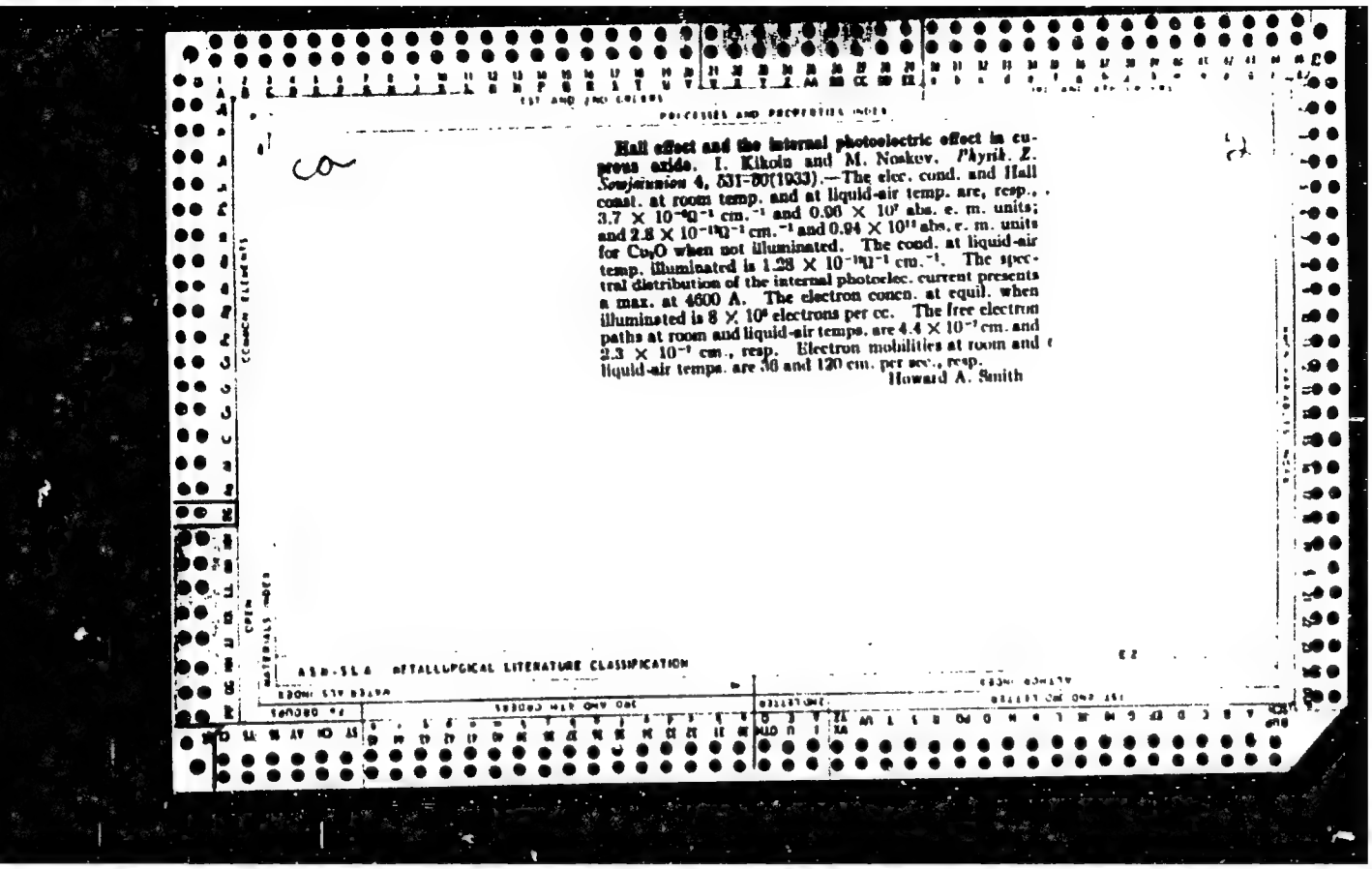

Hall effect and the internal photoelectric effect in cuprous oxide. I. Kikoin and M. Noskov. *Physik. Z. Sowjetunion* 4, 531–60(1933).—The elec. cond. and Hall const. at room temp. and at liquid-air temp. are, resp., $3.7 \times 10^{-6}\Omega^{-1}$ cm.$^{-1}$ and 0.90 $\times$ 10^{7} abs. e. m. units; and $2.8 \times 10^{-13}\Omega^{-1}$ cm.$^{-1}$ and 0.94×10^{11} abs. e. m. units for Cu_2O when not illuminated. The cond. at liquid-air temp. illuminated is $1.28 \times 10^{-10}\Omega^{-1}$ cm.$^{-1}$. The spectral distribution of the internal photoelec. current presents a max. at 4600 A. The electron concn. at equil. when illuminated is 8×10^{9} electrons per cc. The free electron paths at room and liquid-air temps. are 4.4×10^{-7} cm. and 2.3×10^{-7} cm., resp. Electron mobilities at room and liquid-air temps. are 36 and 120 cm. per sec., resp.

Howard A. Smith

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000722520008-5

KIKOIN, I. K.; NOSKOV, M. M.

New Photoelectric Effect in Curpous Oxide

Nature 131, 725, 1933

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KIKOIN, I. K., DORFMAN, Ia. G.

GTTI, Leingrad, 1934, 495 pp, Physics of Metals.

"A monograph."

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KIKOIN, I.

3068. New Photoelectric Effect in Cuprous Oxide. I. Kikoin. *Comptes Rendus de l'Acad. des Sciences, U.R.S.S.* 2. 2. *pp.* 71–76, 1934. *In German.*—If on a plate of Cu_2O, placed between the poles of a magnet at the temperature of liquid air, light falls in a direction perpendicular to the field and to the surface of the plate, then there exists in the plate in a direction perpendicular to the field and to the direction of the incident light a potential gradient which depends on the magnetic field. The nature of the electrodes used in measuring the p. d. has no influence. Further quantitative measurements show that the current due to the p. d. which flows through the test piece in the magnetic field is strictly proportional to the intensity of the incident light. If L is the intensity of the light and H the field strength the current $i = kLH$ where k is a material constant. If σ_0 is the thermal conductivity and σ_1 the photo-conductivity ($\sigma_1 = \beta L$) then the p. d. $V = kL/(\sigma_0 + \beta L)$. When L is large $V = k/\beta$ a constant, or a saturation must be observed which agrees with experiment.

J. J. S.

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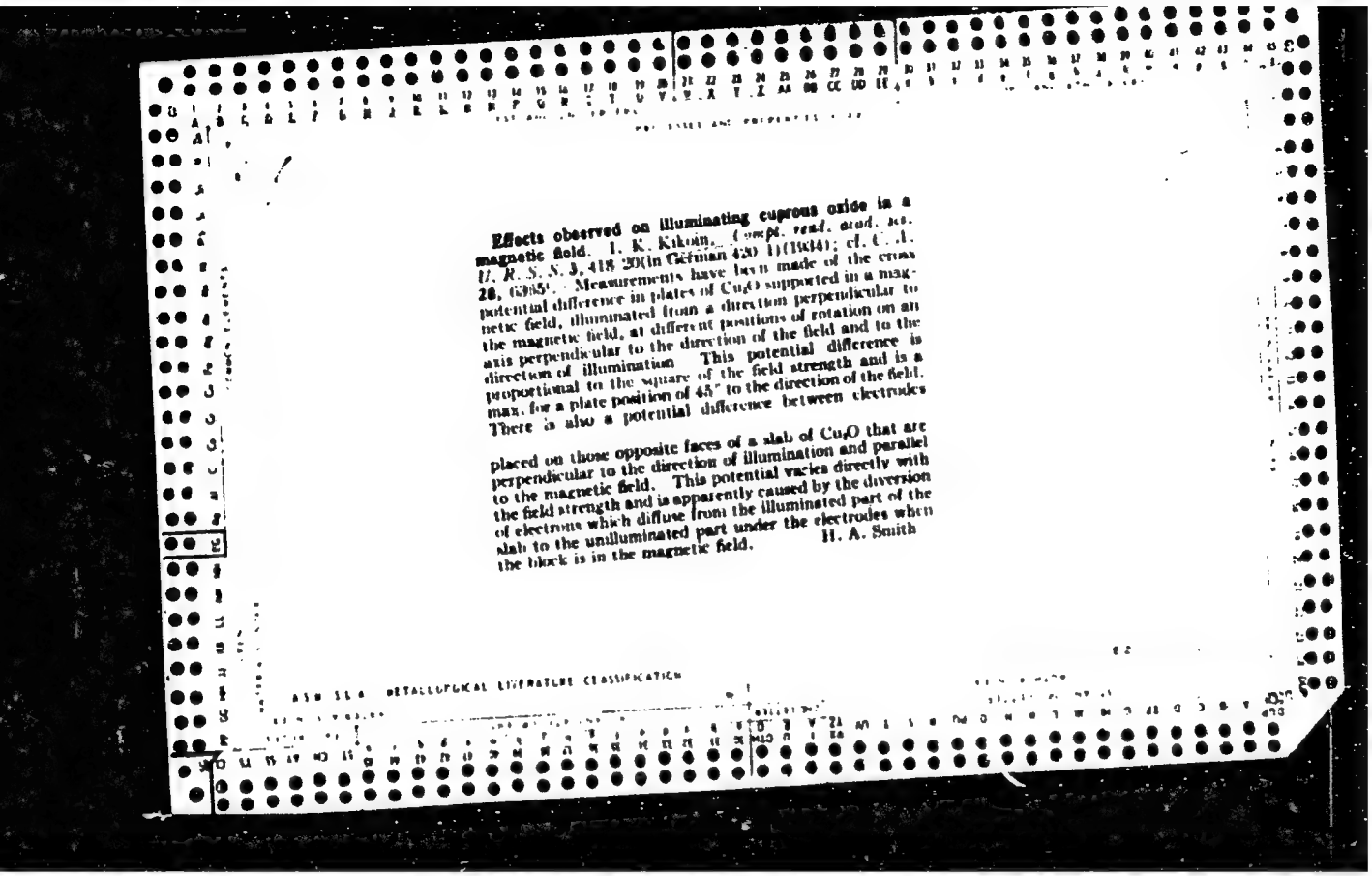

Effects observed on illuminating cuprous oxide in a magnetic field. I. K. Kikoin. *Compt. rend. acad. sci. U. R. S. S.* 3, 418-20 (in German 420-1)(1934); cf. C. A. 28, 6985. Measurements have been made of the cross potential difference in plates of Cu_2O supported in a magnetic field, illuminated from a direction perpendicular to the magnetic field, at different positions of rotation on an axis perpendicular to the direction of the field and to the direction of illumination. This potential difference is proportional to the square of the field strength and is a max. for a plate position of 45° to the direction of the field. There is also a potential difference between electrodes placed on those opposite faces of a slab of Cu_2O that are perpendicular to the direction of illumination and parallel to the magnetic field. This potential varies directly with the field strength and is apparently caused by the diversion of electrons which diffuse from the illuminated part of the slab to the unilluminated part under the electrodes when the block is in the magnetic field. H. A. Smith

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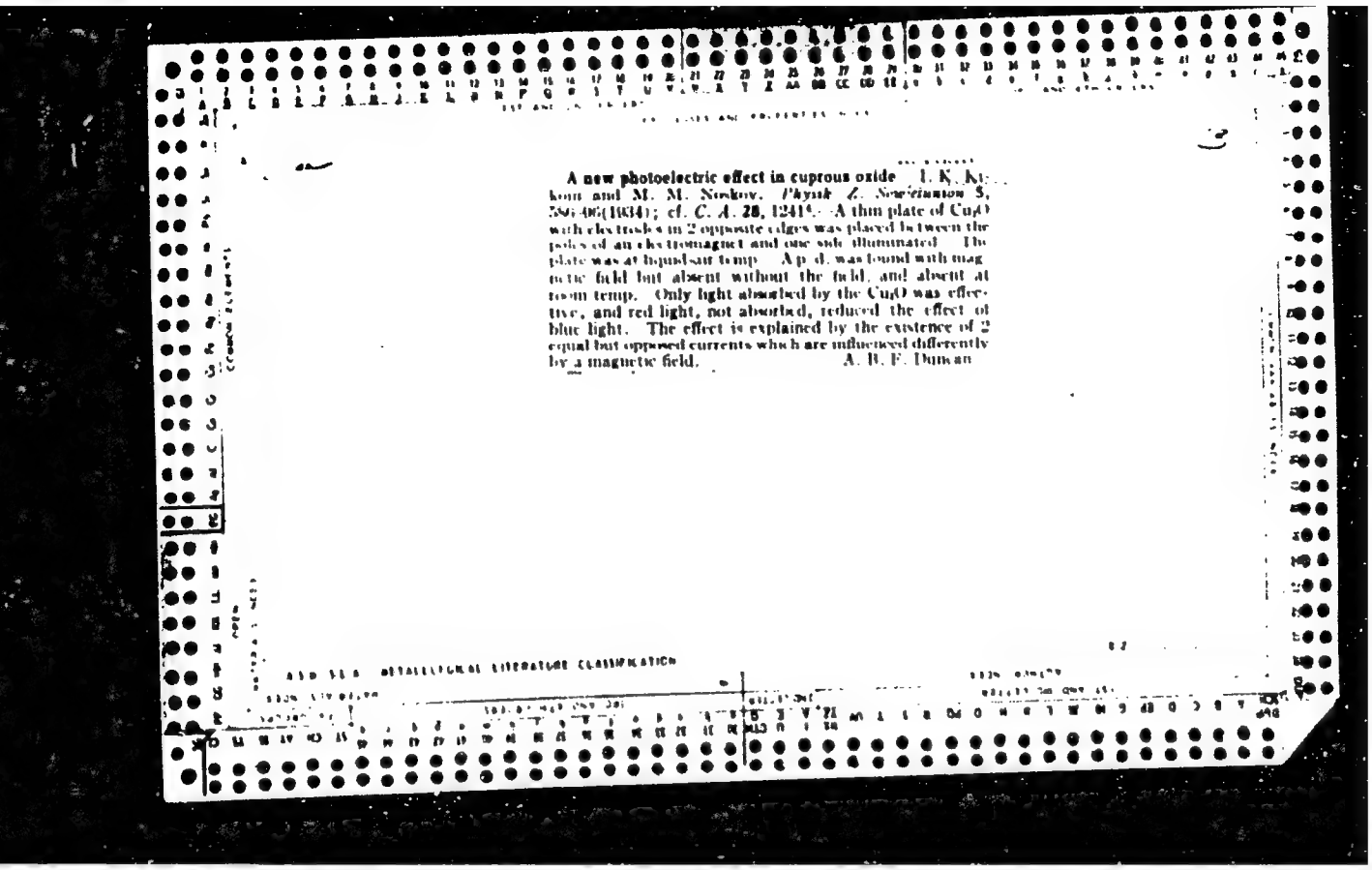

A new photoelectric effect in cuprous oxide I. K. Kikoin and M. M. Noskov. *Physik. Z. Sowjetunion* 5, 586-96(1934); cf. *C. A.* **28**, 1241⁹. A thin plate of Cu_2O with electrodes in 2 opposite edges was placed between the poles of an electromagnet and one side illuminated. The plate was at liquid-air temp. A p. d. was found with magnetic field but absent without the field, and absent at room temp. Only light absorbed by the Cu_2O was effective, and red light, not absorbed, reduced the effect of blue light. The effect is explained by the existence of 2 equal but opposed currents which are influenced differently by a magnetic field. A. B. F. Duncan

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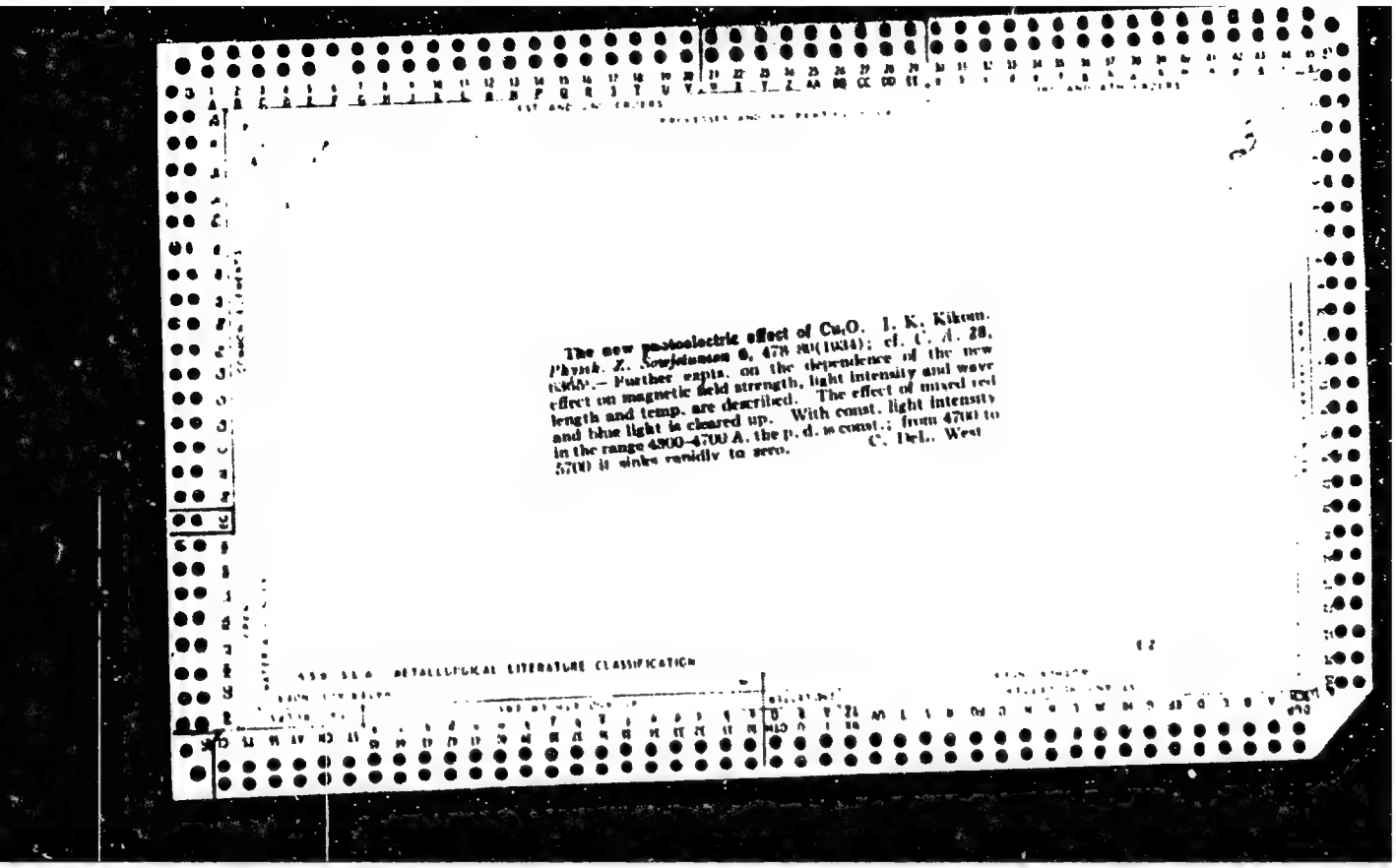

The new photoelectric effect of Cu_2O. I. K. Kikom. *Physik. Z. Sowjetunion* 6, 478-80(1934); cf. C. A. 28, 6365.— Further expts. on the dependence of the new effect on magnetic field strength, light intensity and wave length and temp. are described. The effect of mixed red and blue light is cleared up. With const. light intensity in the range 4300-4700 A. the p. d. is const.; from 4700 to 5700 it sinks rapidly to zero. C. DeL. West

METALLURGICAL LITERATURE CLASSIFICATION

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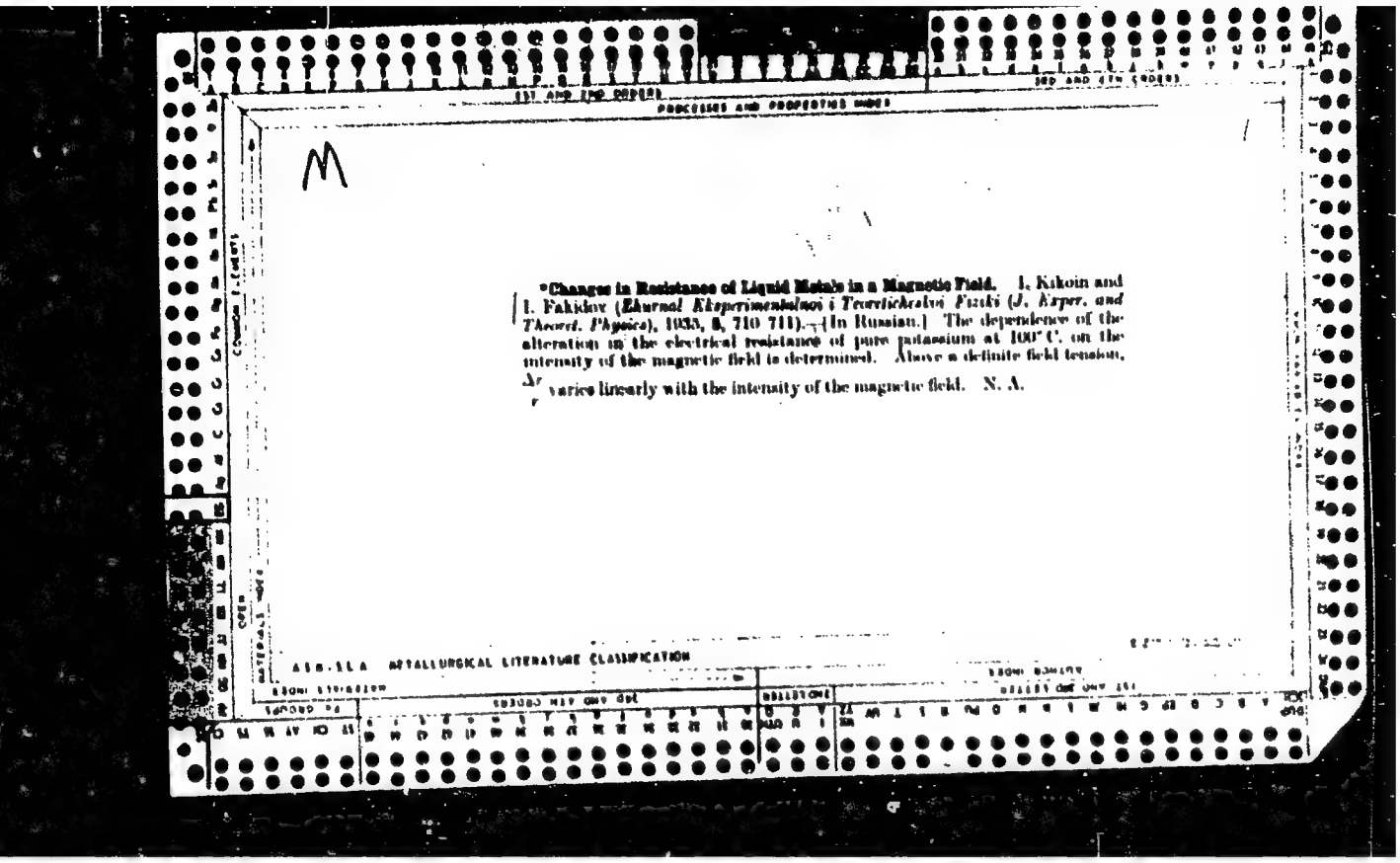

***Changes in Resistance of Liquid Metals in a Magnetic Field.** I. Kikoin and I. Fakidov (*Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki* (*J. Exper. and Theoret. Physics*), 1935, **5**, 710–711).—[In Russian.] The dependence of the alteration in the electrical resistance of pure potassium at 100° C. on the intensity of the magnetic field is determined. Above a definite field tension, $\frac{\Delta r}{r}$ varies linearly with the intensity of the magnetic field. N. A.

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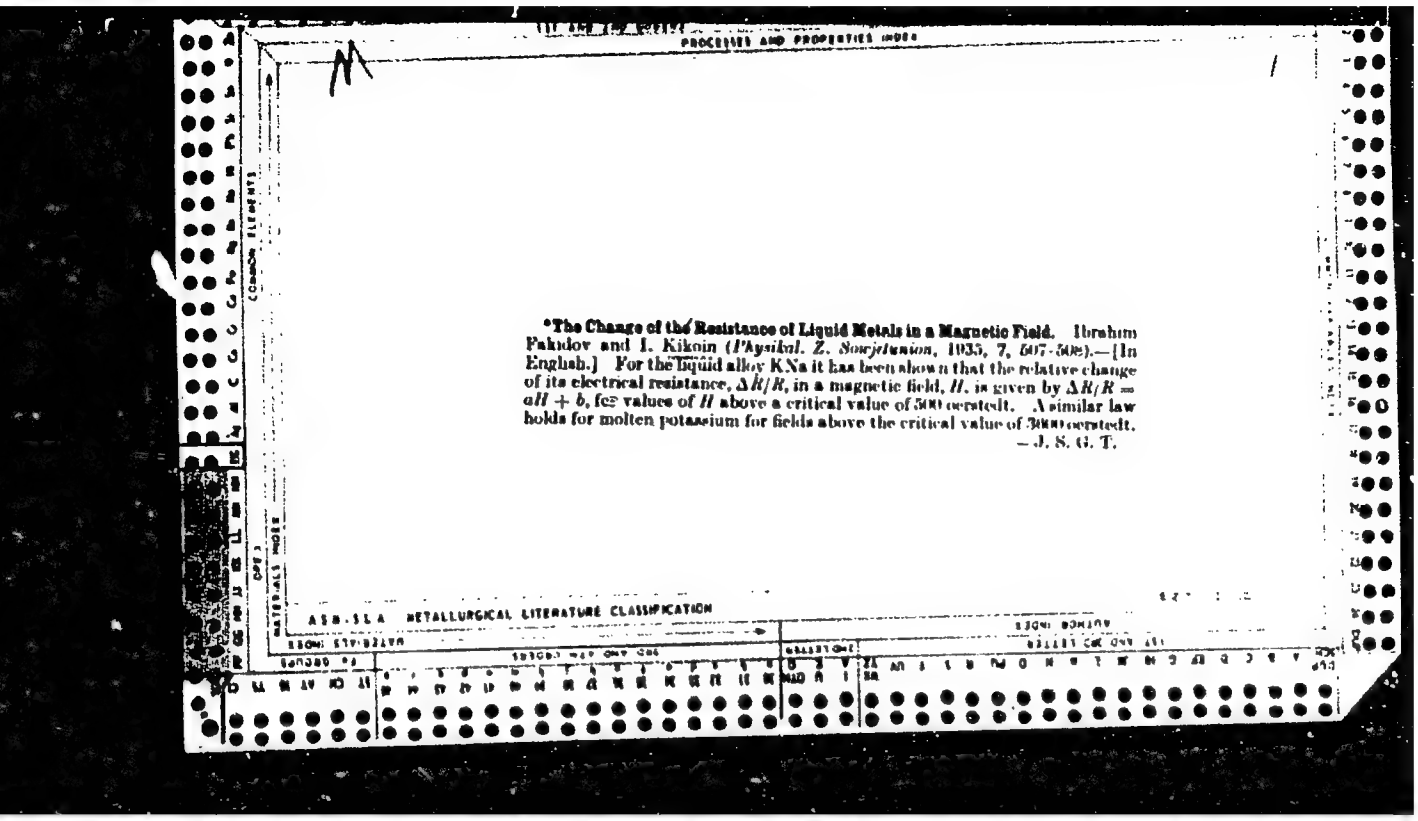

***The Change of the Resistance of Liquid Metals in a Magnetic Field.** Ibrahim Pakidov and I. Kikoin (*Physikal. Z. Sowjetunion*, 1935, 7, 507–508).—[In English.] For the liquid alloy KNa it has been shown that the relative change of its electrical resistance, $\Delta R/R$, in a magnetic field, H, is given by $\Delta R/R = aH + b$, for values of H above a critical value of 500 oerstedt. A similar law holds for molten potassium for fields above the critical value of 3000 oerstedt.

—J. S. G. T.

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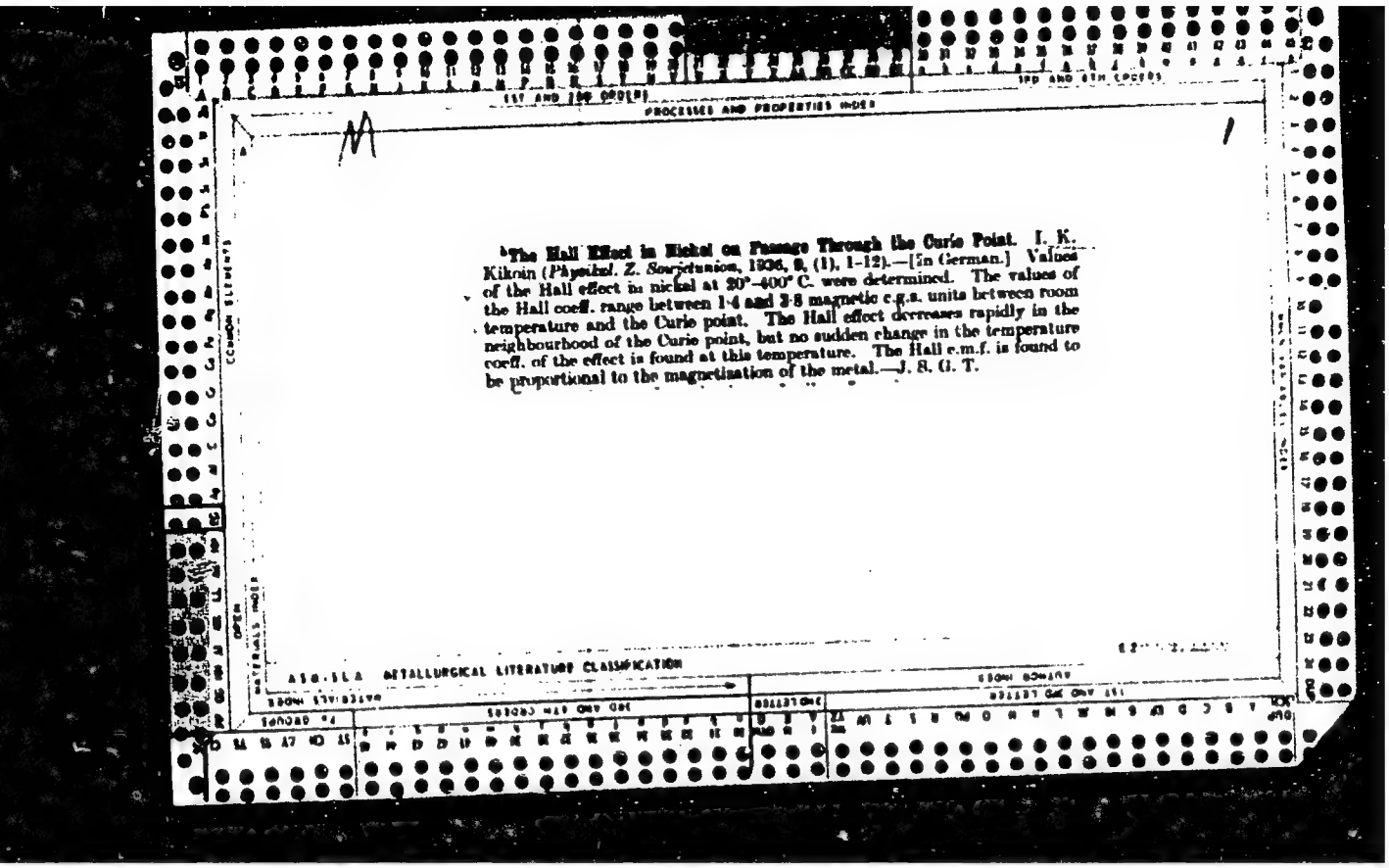

The Hall Effect in Nickel on Passage Through the Curie Point. I. K. Kikoin (*Physikal. Z. Sowjetunion*, 1936, **9**, (1), 1–12).—[In German.] Values of the Hall effect in nickel at 20°–400° C. were determined. The values of the Hall coeff. range between 1·4 and 3·8 magnetic c.g.s. units between room temperature and the Curie point. The Hall effect decreases rapidly in the neighbourhood of the Curie point, but no sudden change in the temperature coeff. of the effect is found at this temperature. The Hall e.m.f. is found to be proportional to the magnetisation of the metal.—J. S. G. T.

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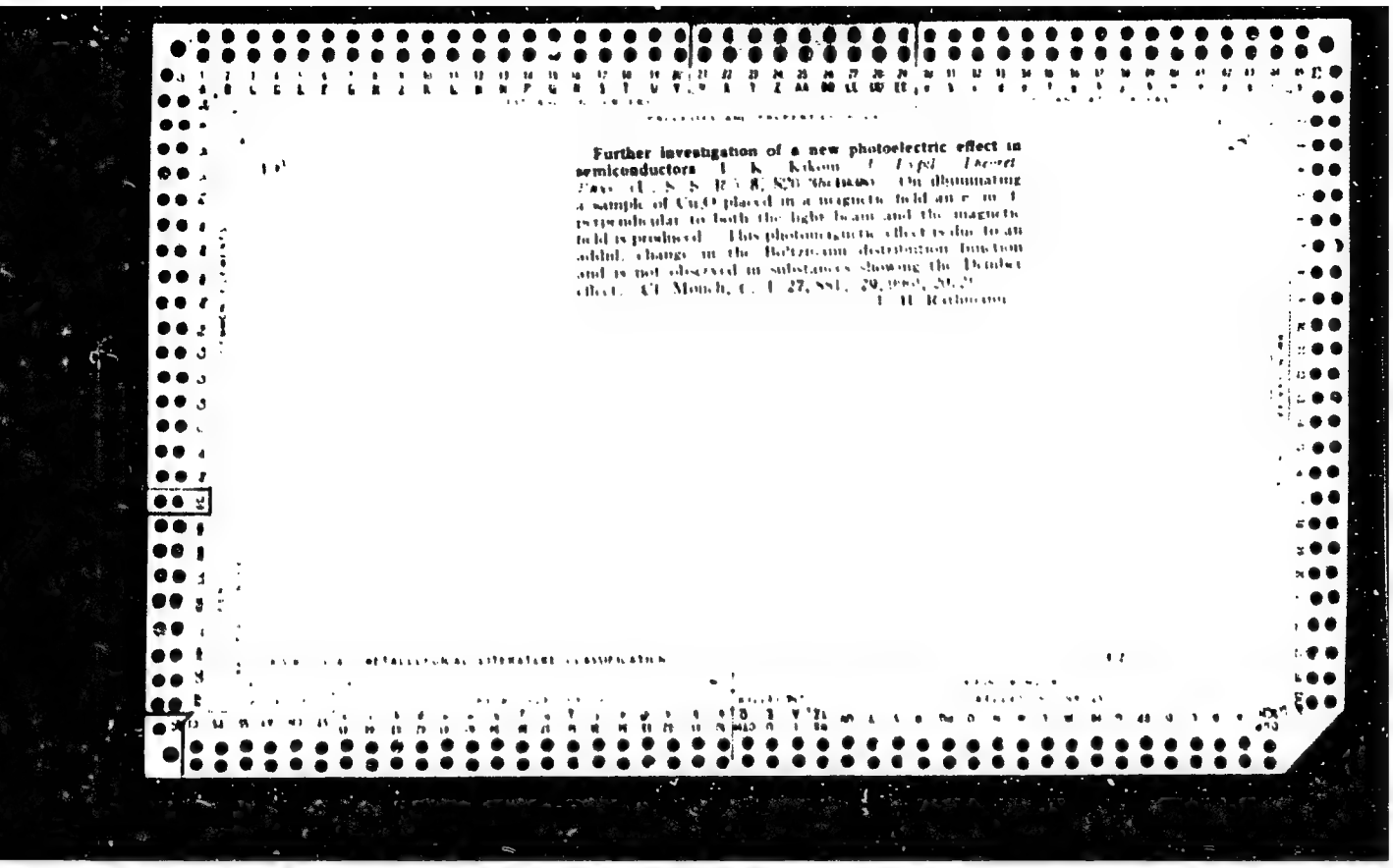

Further investigation of a new photoelectric effect in semiconductors I. K. Kikoin. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 8, 820-[illegible]. On illuminating a sample of Cu_2O placed in a magnetic field an e. m. f. perpendicular to both the light beam and the magnetic field is produced. This photomagnetic effect is due to an addl. change in the Boltzmann distribution function and is not observed in substances showing the Dember effect. Cf. Mouch, C. I. 27, 881, 29, [illegible]. I. H. Rathmann

METALLURGICAL LITERATURE CLASSIFICATION

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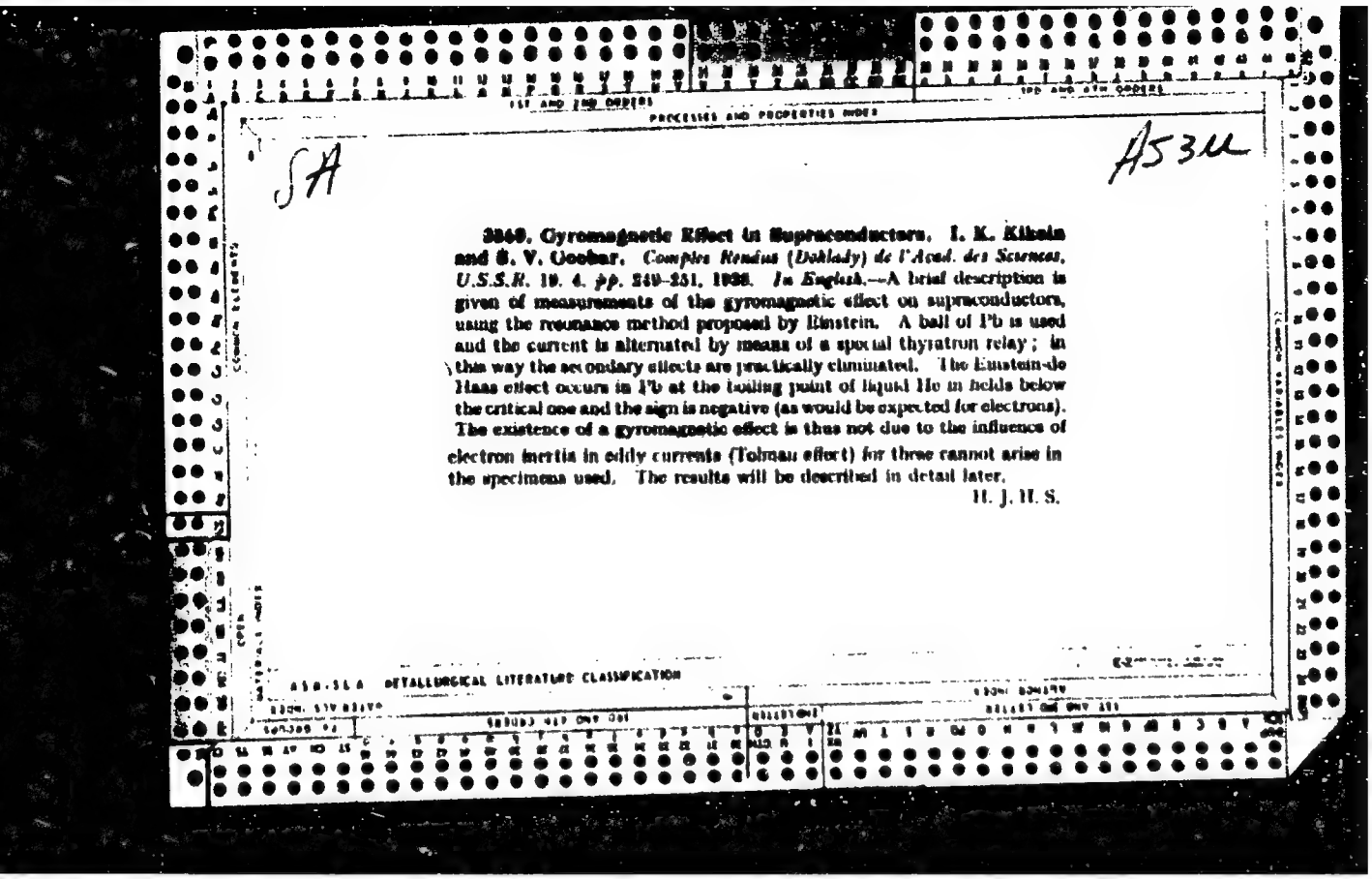

PROCESSES AND PROPERTIES INDEX

SA

A53U

3869. Gyromagnetic Effect in Superconductors. I. K. Kikoin and S. V. Goobar. *Comptes Rendus (Doklady) de l'Acad. des Sciences, U.S.S.R.* 19. 4. *pp.* 249–251. 1938. *In English.*—A brief description is given of measurements of the gyromagnetic effect on superconductors, using the resonance method proposed by Einstein. A ball of Pb is used and the current is alternated by means of a special thyratron relay; in this way the secondary effects are practically eliminated. The Einstein-de Haas effect occurs in Pb at the boiling point of liquid He in fields below the critical one and the sign is negative (as would be expected for electrons). The existence of a gyromagnetic effect is thus not due to the influence of electron inertia in eddy currents (Tolman effect) for these cannot arise in the specimens used. The results will be described in detail later.

H. J. H. S.

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION

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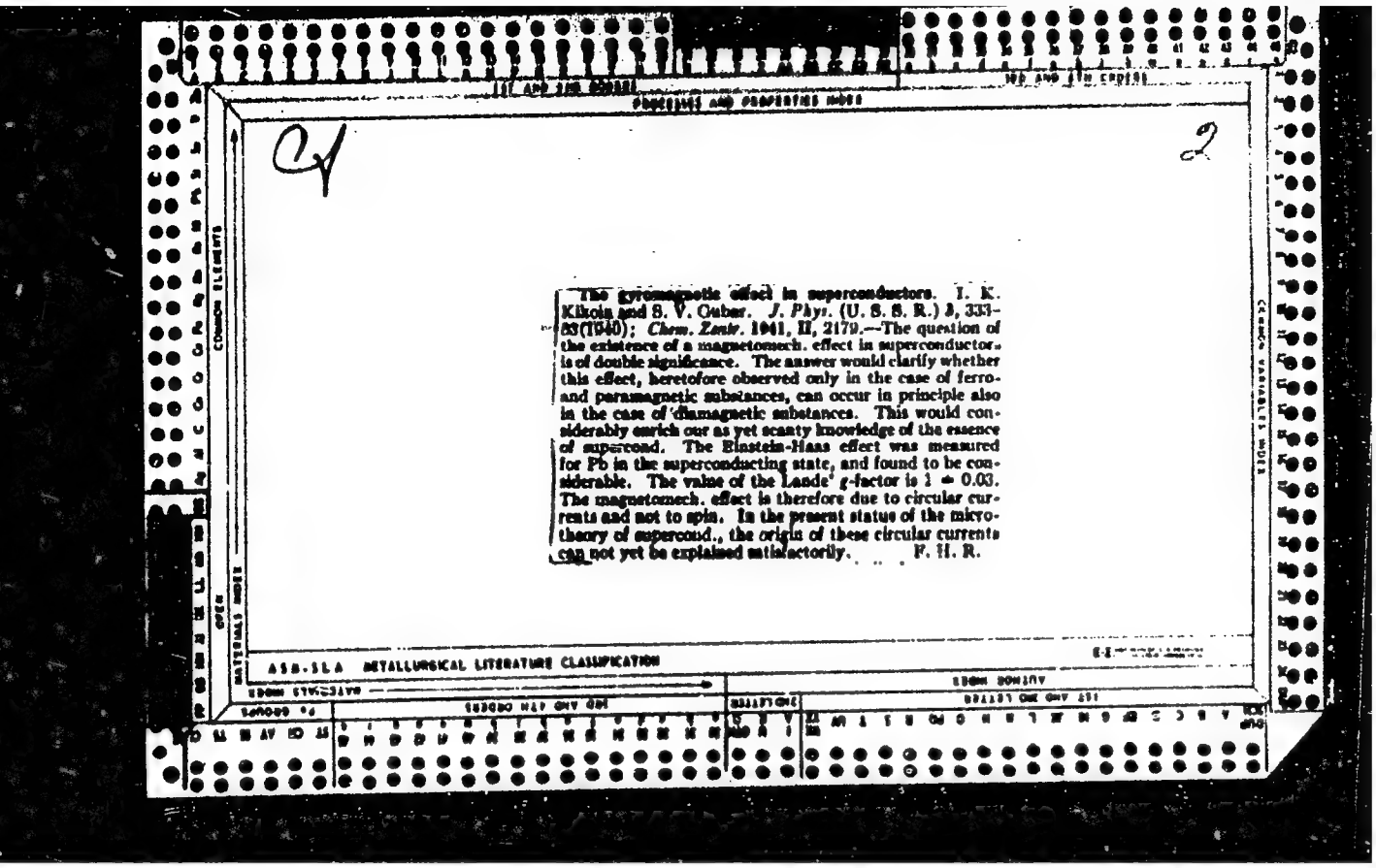

The gyromagnetic effect in superconductors. I. K. Kikoin and S. V. Gubar. *J. Phys.* (U. S. S. R.) 3, 333-53(1940); *Chem. Zentr.* 1941, II, 2179.—The question of the existence of a magnetomech. effect in superconductors is of double significance. The answer would clarify whether this effect, heretofore observed only in the case of ferro- and paramagnetic substances, can occur in principle also in the case of diamagnetic substances. This would considerably enrich our as yet scanty knowledge of the essence of supercond. The Einstein-Haas effect was measured for Pb in the superconducting state, and found to be considerable. The value of the Lande' *g*-factor is 1 ± 0.03. The magnetomech. effect is therefore due to circular currents and not to spin. In the present status of the microtheory of supercond., the origin of these circular currents can not yet be explained satisfactorily. . . . F. H. R.

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KIKOIN, I. K.; SIMONENKO, D. L.

The Effect of the Magnetic Field on the Photoconductivity of Semiconductors

ZhEFT 10, 1030, 1940

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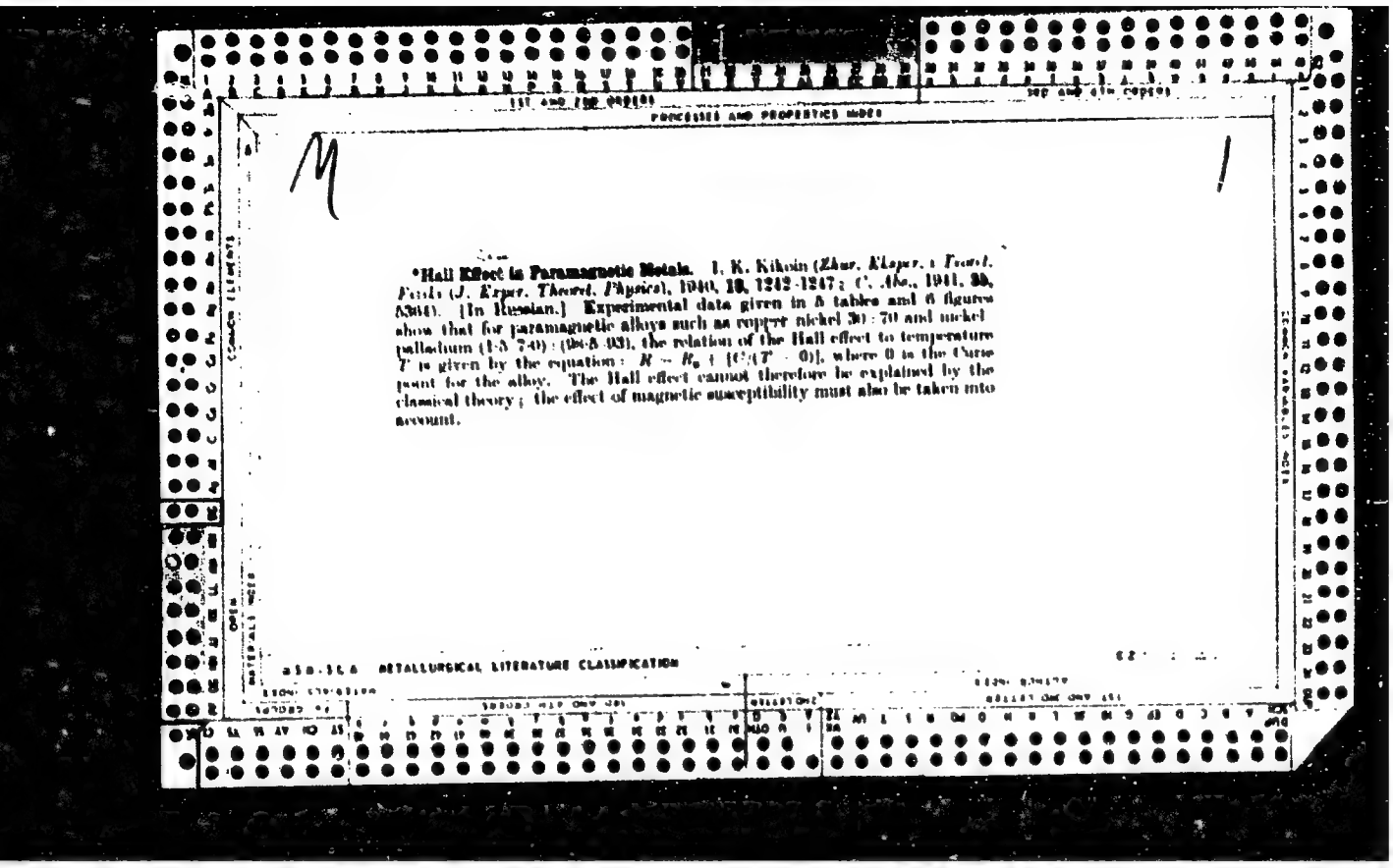

M

1

*Hall Effect in Paramagnetic Metals. I. K. Kikoin (*Zhur. Eksper. i Teoret. Fiziki* (*J. Exper. Theoret. Physics*), 1940, **10**, 1242-1247; *C. Abs.*, 1941, **35**, 5304). [In Russian.] Experimental data given in 5 tables and 6 figures show that for paramagnetic alloys such as copper nickel (30 : 70 and nickel palladium (1·5 : 98·5) : (98·5 : 93), the relation of the Hall effect to temperature T is given by the equation: $R = R_0 + [C/(T - \theta)]$, where θ is the Curie point for the alloy. The Hall effect cannot therefore be explained by the classical theory; the effect of magnetic susceptibility must also be taken into account.

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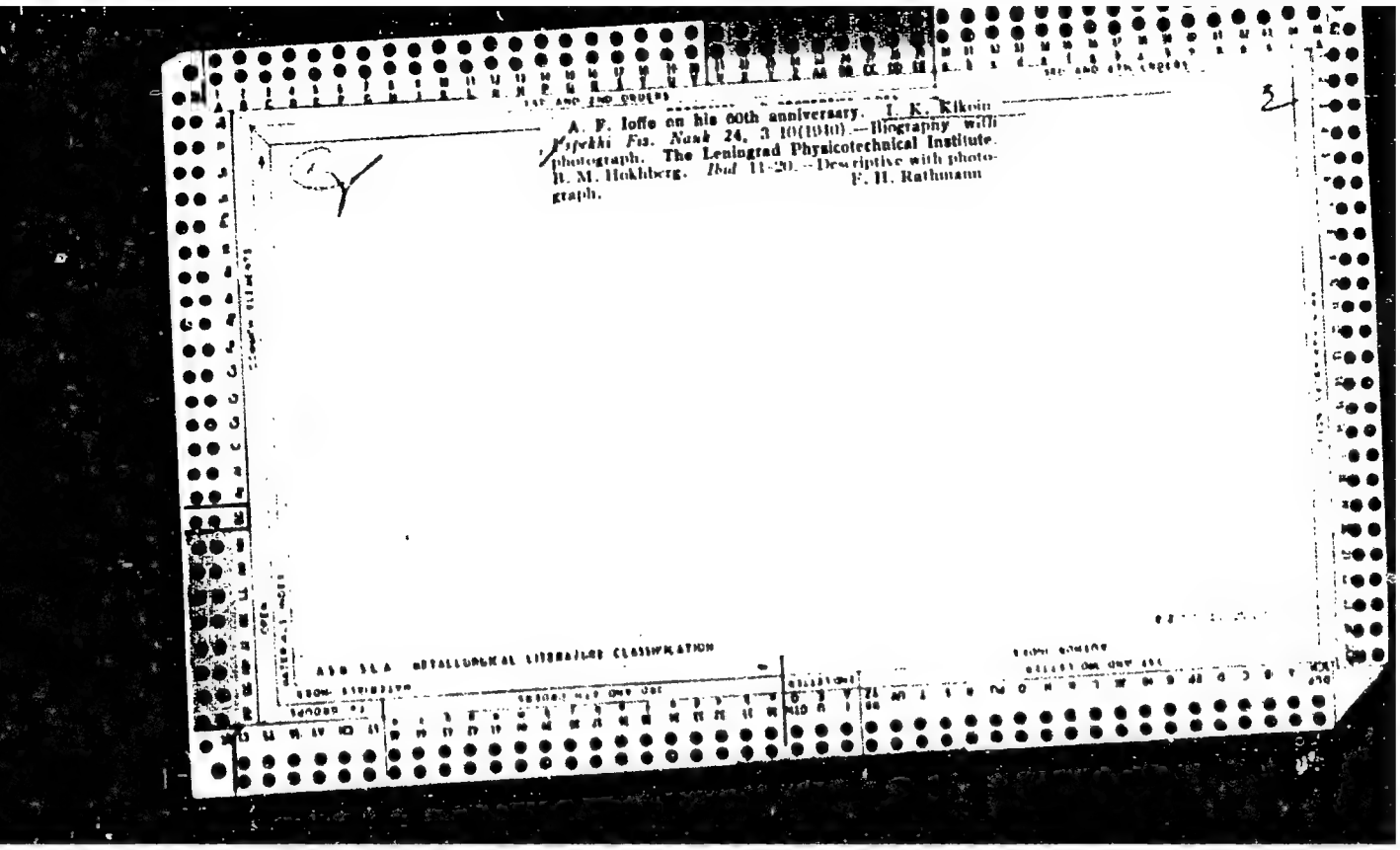

A. F. Ioffe on his 60th anniversary. I. K. Kikoin. *Zhurnal Fiz. Nauk* 24, 3-10(1940).—Biography with photograph. The Leningrad Physicotechnical Institute. B. M. Hokhberg. *Ibid* 11-20.—Descriptive with photograph. F. H. Rathmann

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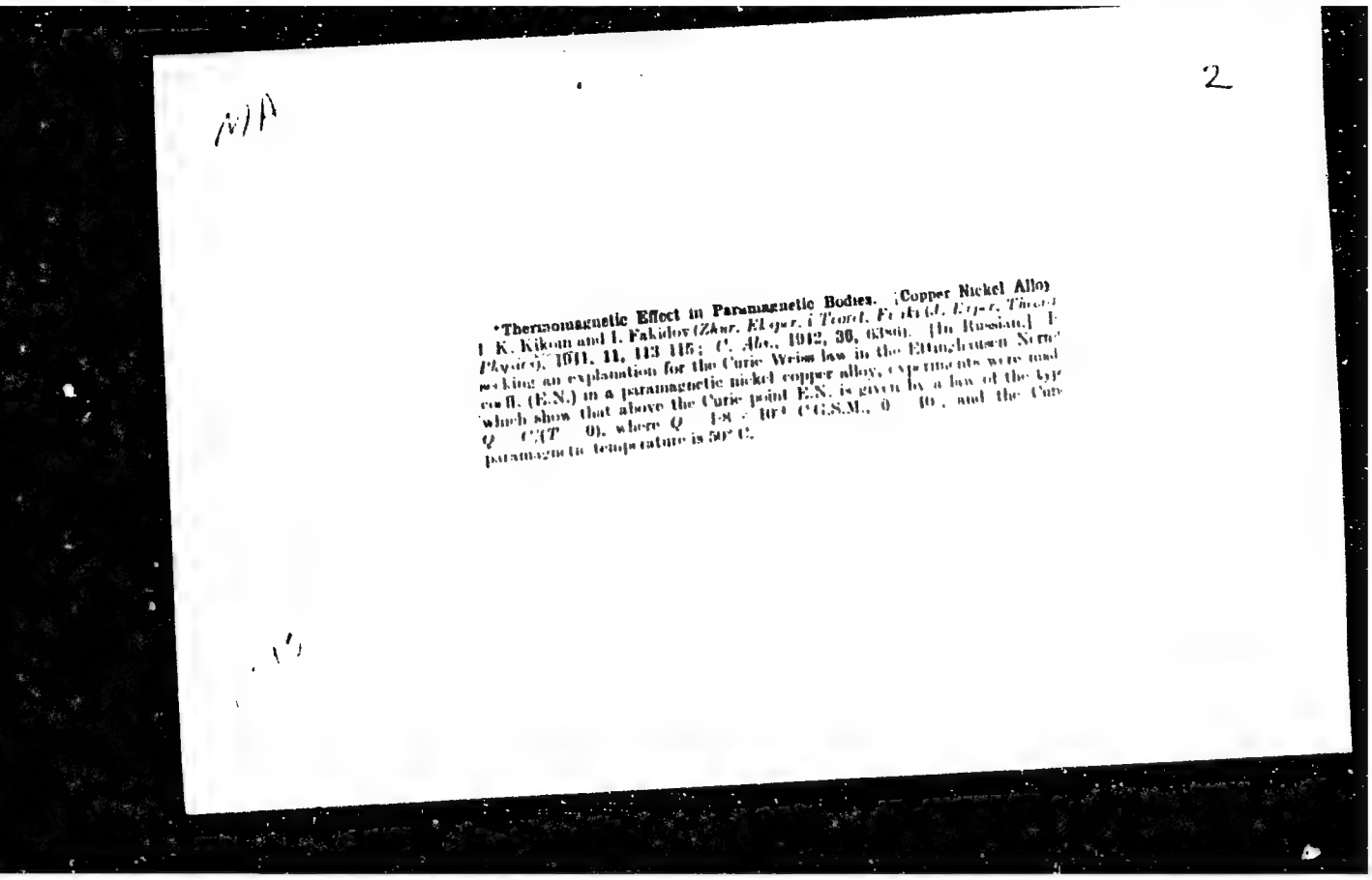

2

MA

Thermomagnetic Effect in Paramagnetic Bodies. [Copper Nickel Alloy] I. K. Kikoin and I. Fakidov (*Zhur. Eksper. i Teoret. Fiziki* (*J. Exper. Theor. Physics*), 1941, **11**, 113-115; *C. Abs.*, 1942, **36**, 6386). [In Russian.] In seeking an explanation for the Curie-Weiss law in the Ettinghausen-Nernst coeff. (E.N.) in a paramagnetic nickel copper alloy, experiments were made which show that above the Curie point E.N. is given by a law of the type $Q = C/(T - \theta)$, where $Q = 1.8 \times 10^{-4}$ C.G.S.M., $\theta = 40°$, and the Curie paramagnetic temperature is 50° C.

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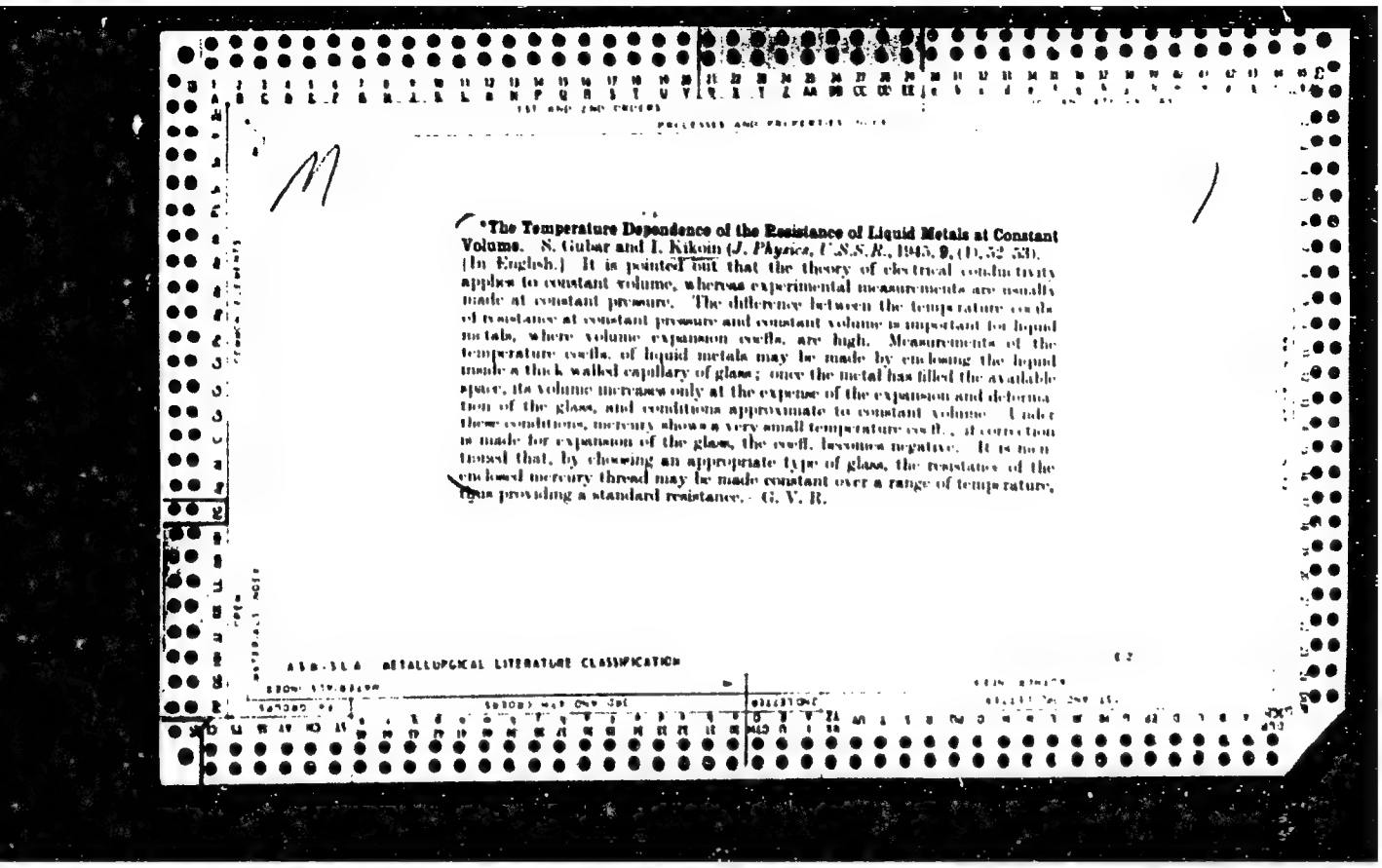

The Temperature Dependence of the Resistance of Liquid Metals at Constant Volume. S. Gulsar and I. Kikoin (*J. Physics, U.S.S.R.*, 1945, **9**, (1), 52–53). (In English.) It is pointed out that the theory of electrical conductivity applies to constant volume, whereas experimental measurements are usually made at constant pressure. The difference between the temperature coefficient of resistance at constant pressure and constant volume is important for liquid metals, where volume expansion coeffs. are high. Measurements of the temperature coeffs. of liquid metals may be made by enclosing the liquid inside a thick walled capillary of glass; once the metal has filled the available space, its volume increases only at the expense of the expansion and deformation of the glass, and conditions approximate to constant volume. Under these conditions, mercury shows a very small temperature coeff., if correction is made for expansion of the glass, the coeff. becomes negative. It is mentioned that, by choosing an appropriate type of glass, the resistance of the enclosed mercury thread may be made constant over a range of temperature, thus providing a standard resistance.—G. V. R.

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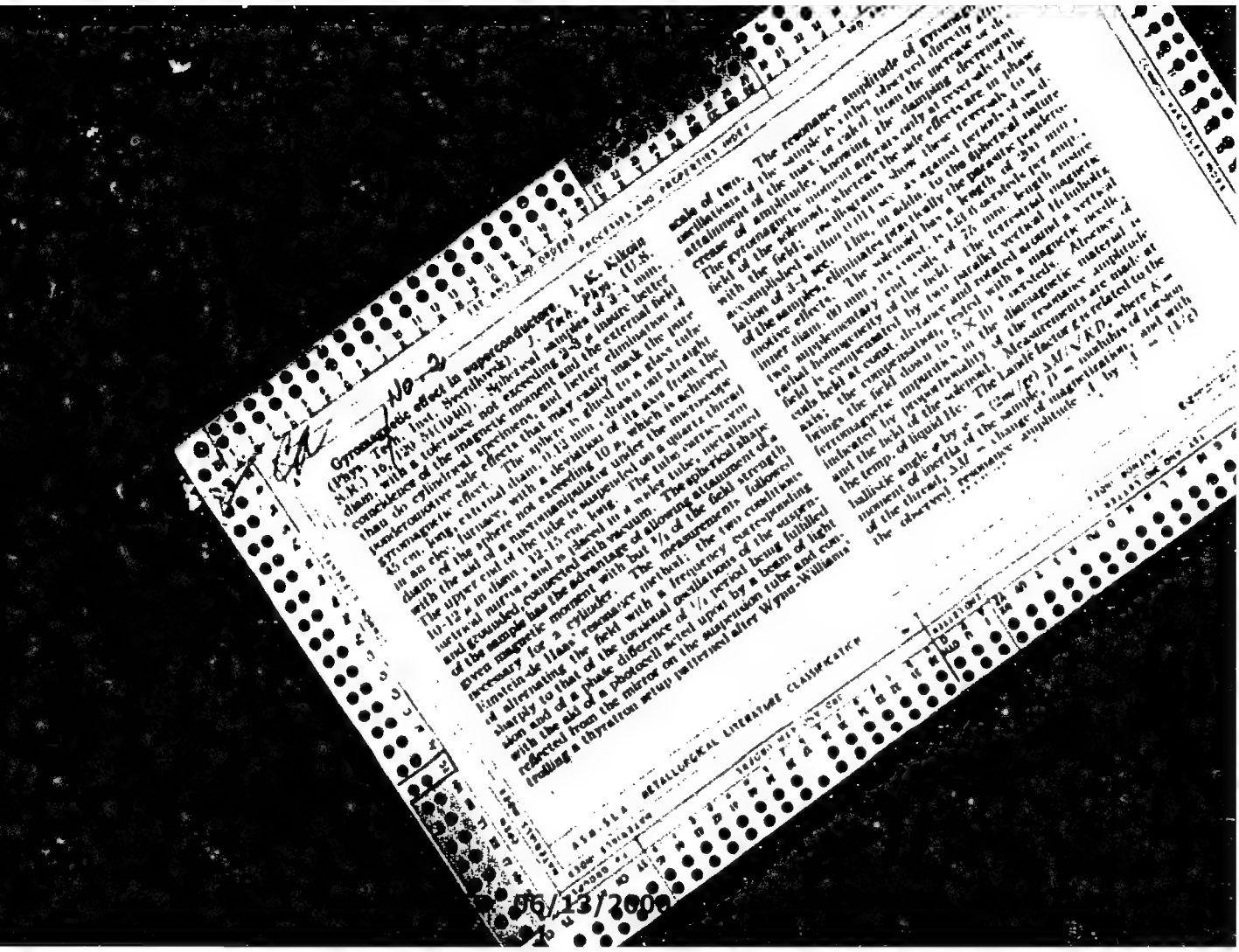

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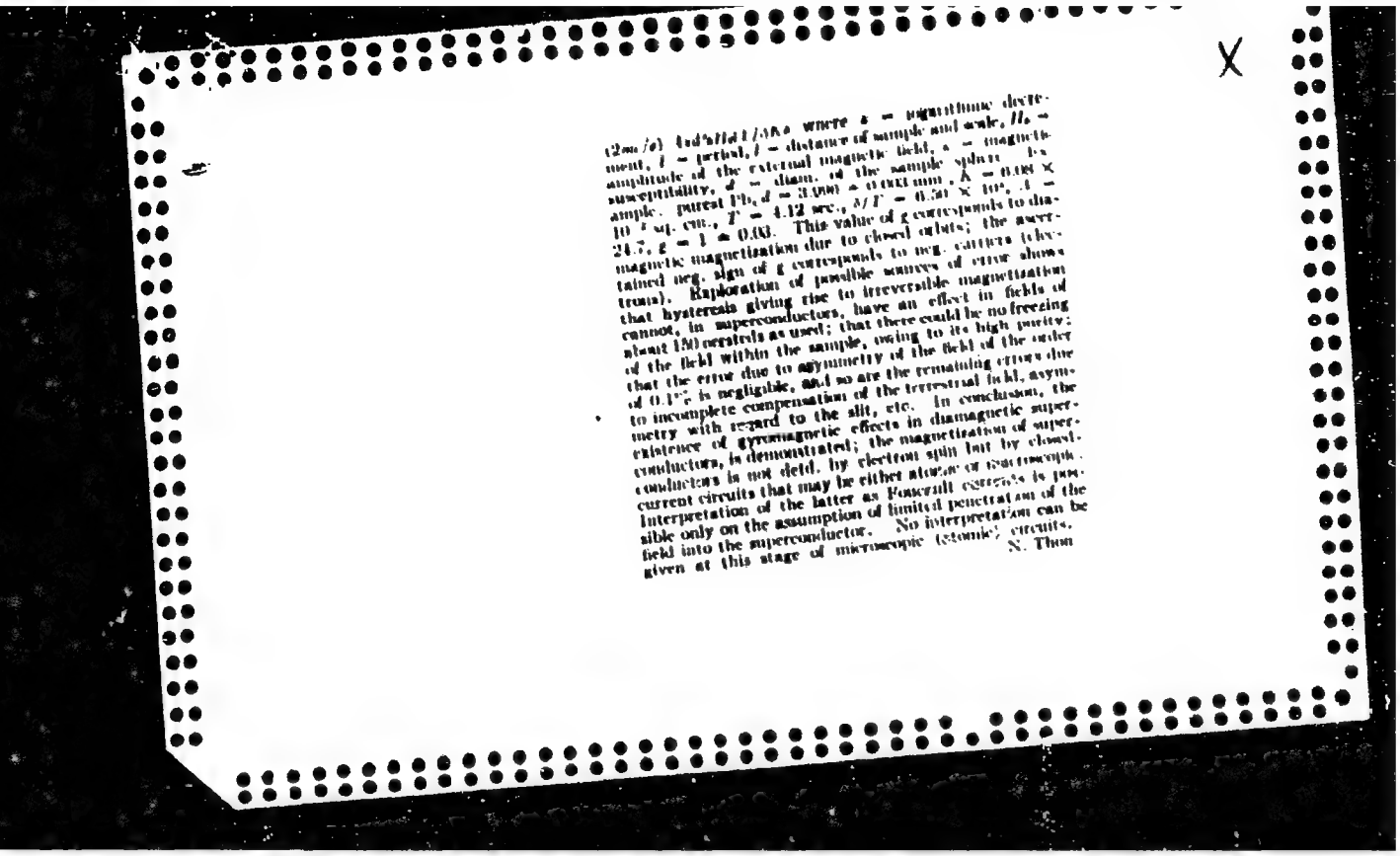

X

$(2m_0/e)\ A_0 d^2 \pi H_0 d / \delta K s$ where s = logarithmic decrement, l = period, l = distance of sample and scale, H_0 = amplitude of the external magnetic field, s = magnetic susceptibility, d = diam. of the sample sphere. Ex. ample: purest Pb, d = 3.000 ± 0.003 mm., K = 0.08 × 10^{-5} sq. cm., T = 4.12 sec., δ/T = 0.50 × 10^{-6}, A = 24.7, g = 1 ± 0.03. This value of g corresponds to diamagnetic magnetization due to closed orbits; the ascertained neg. sign of g corresponds to neg. carriers (electrons). Exploration of possible sources of error shows that hysteresis giving rise to irreversible magnetization cannot, in superconductors, have an effect in fields of about 150 oersteds as used; that there could be no freezing of the field within the sample, owing to its high purity; that the error due to asymmetry of the field of the order of 0.1% is negligible, and so are the remaining errors due to incomplete compensation of the terrestrial field, asymmetry with regard to the slit, etc. In conclusion, the existence of gyromagnetic effects in diamagnetic superconductors, is demonstrated; the magnetization of superconductors is not detd. by electron spin but by closed-current circuits that may be either atomic or macroscopic. Interpretation of the latter as Foucault currents is possible only on the assumption of limited penetration of the field into the superconductor. No interpretation can be given at this stage of microscopic (atomic) circuits.

N. Thon

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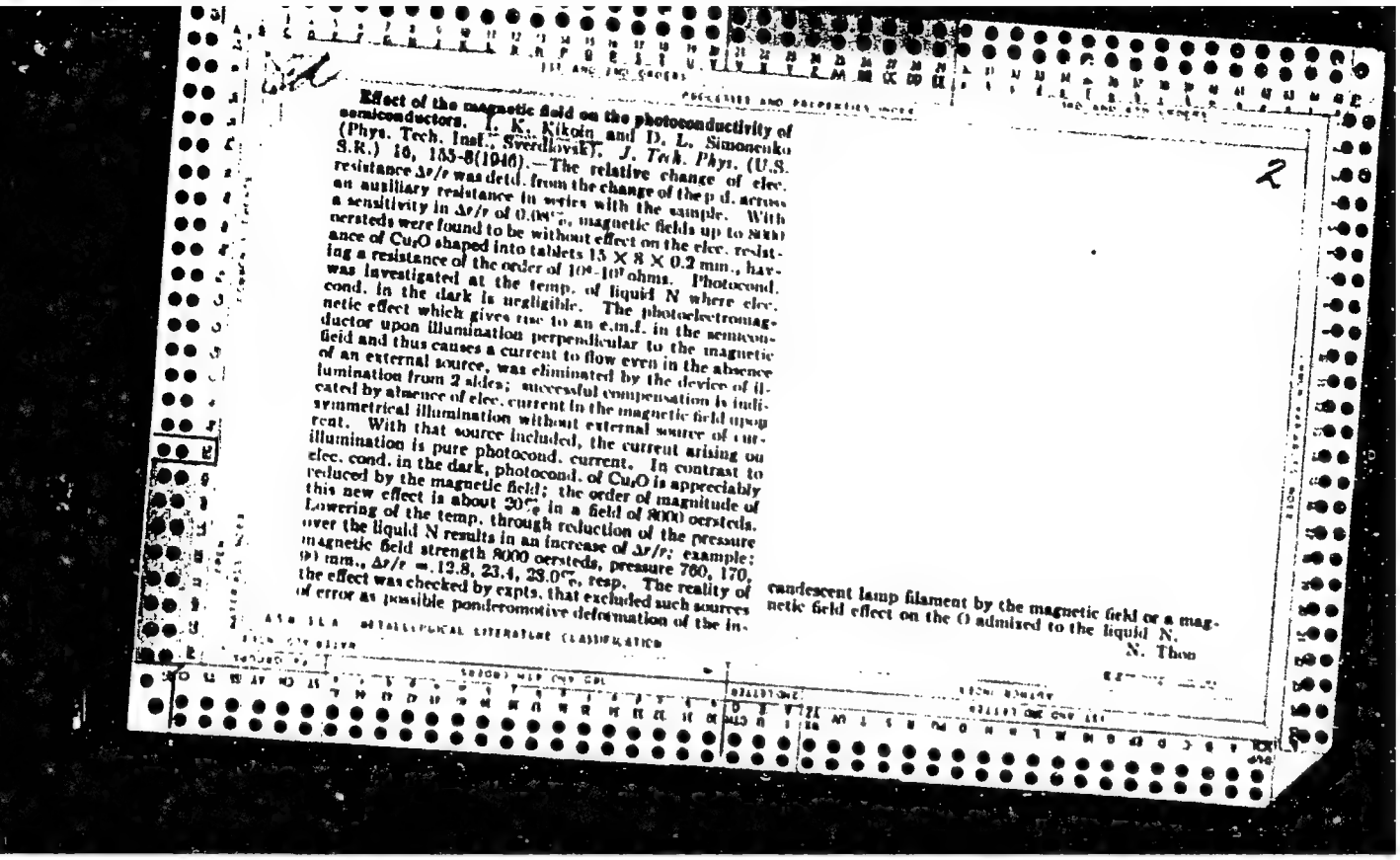

Effect of the magnetic field on the photoconductivity of semiconductors. I. K. Kikoin and D. L. Simonenko (Phys. Tech. Inst., Sverdlovsk). *J. Tech. Phys.* (U.S.S.R.) 16, 185-8(1946).—The relative change of elec. resistance $\Delta\rho/\rho$ was detd. from the change of the p. d. across an auxiliary resistance in series with the sample. With a sensitivity in $\Delta\rho/\rho$ of 0.08%, magnetic fields up to 8000 oersteds were found to be without effect on the elec. resistance of Cu_2O shaped into tablets 15 × 8 × 0.2 mm., having a resistance of the order of 10^8–10^9 ohms. Photocond. was investigated at the temp. of liquid N where elec. cond. in the dark is negligible. The photoelectromagnetic effect which gives rise to an e.m.f. in the semiconductor upon illumination perpendicular to the magnetic field and thus causes a current to flow even in the absence of an external source, was eliminated by the device of illumination from 2 sides; successful compensation is indicated by absence of elec. current in the magnetic field upon symmetrical illumination without external source of current. With that source included, the current arising on illumination is pure photocond. current. In contrast to elec. cond. in the dark, photocond. of Cu_2O is appreciably reduced by the magnetic field; the order of magnitude of this new effect is about 30% in a field of 8000 oersteds. Lowering of the temp. through reduction of the pressure over the liquid N results in an increase of $\Delta\rho/\rho$; example: magnetic field strength 8000 oersteds, pressure 760, 170, 90 mm., $\Delta\rho/\rho$ = 12.8, 23.4, 28.0%, resp. The reality of the effect was checked by expts. that excluded such sources of error as possible ponderomotive deformation of the incandescent lamp filament by the magnetic field or a magnetic field effect on the O admixed to the liquid N. N. Thon

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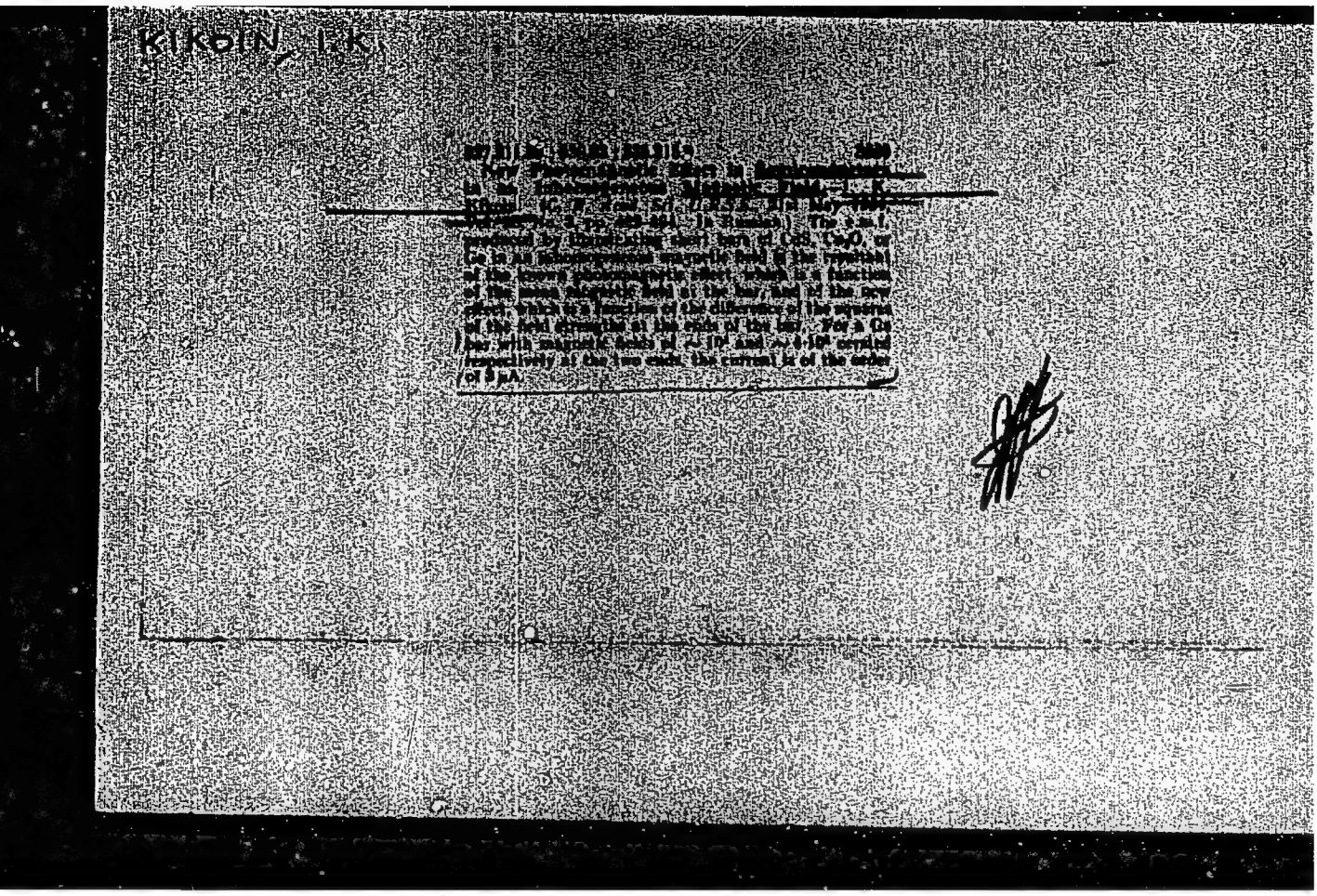

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KIKOIN, I. K.

USSR/Physics - Semi-conductors

Card 1/1 Pub. 22 - 14/47

Authors : Kikanin, I. K., Academician; Ganev, I. Kh.; and Karchevskiy, A. I.

Title : About the cause of the generation of e.m.f. in semi-conductors subjected to light in a non-homogeneous magnetic field

Periodical : Dok. AN SSSR 99/1, page 51, Nov 1, 1954

Abstract : Experiments intended to find the causes which give rise to e.m.f. in semi-conductors when they are subjected to light in a non-homogeneous magnetic field are outlined. One reference (1954).

Institution : ...

Submitted : ...

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KIKOIN,I.K., BYKOVSKIY, U.N.

"On the Transversal Photomagnetic Effect in Germanium" Moscow

Conference on Physics of Magnetic Phenomena,
May 1956, Sverdlovsk, USSR

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KIKOIN, I.K.

SUBJECT	USSR / PHYSICS	CARD 1 / 2	PA - 1434
AUTHOR	KIKOIN,I.K., BYKOVSKIJ,JU.A.		
TITLE	On the Transversal Photomagnetic Effect in n - and p - Germanium.		
PERIODICAL	Dokl.Akad.Nauk,109, fasc.4, 735-736 (1956)		
	Issued: 10 / 1956 reviewed: 10 / 1956		

In connection with the usual photomagnetic effect a field strength which is proportional to the field strength H occurs in the case of illumination along the Y-axis of a sample arranged in a magnetic field (having the direction of the X-axis) in the direction of the Z-axis. If, however, the magnetic field, apart from the component H_x, also has the component H_y, an electromotoric force which is proportional to the product $H_x H_y$ occurs additionally in the X-axis, and this is the transversal photomagnetic effect.

The experimental order is discussed in short. The sample under investigation, which has the shape of a plane rectangular plate, must be fixed at an angle α with respect to the direction of the magnetic field. The samples consisted of plane plates of the size 12 x 6 x 0,8 (mm ?) and were cut out from a germanium monocrystal. The specific resistance of the samples was 45 Ω .cm in the case of p-germanium and 40 Ω .cm in the case of n-germanium. The samples were mounted in a glass tube on a ground carrier (slide) and the tubes with the samples were arranged between the poles of a large electromagnet. By rotating the ground carrier (slide) round its axis it was possible to modify the angle between the plane of the sample and the direction of the magnetic field. As expected, the transversal electromotoric force at $\alpha = 0$ was equal to zero, and at $\alpha = 45^\circ$ it

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attained its maximum value. A peculiar feature is the dependence of the transversal photoelectromotoric force on field strength. In the case of low field strengths this E, as may be expected, is proportional to H^2. In the case of strong fields this dependence is essentially influenced by the temperature of the sample. At room temperature the electromotoric force increases monotonously with an increase of field strength. However, at lower temperatures it attains a maximum, passes through zero, and finally changes its sign. If the direction of the magnetic field changes, the sign of the transversal electromotoric force is conserved in any case. The magnetic field strength that corresponds to the maximum electromotoric force diminishes with a decrease of temperature. Therefore the temperature dependence of the transversal photomagnetic effect was investigated. In the case of p-germanium the transversal photomagnetic electromotoric force changes its sign twice, on which occasion it passes through a maximum. In the case of n-germanium no change of signs was found to occur in the temperature range investigated. The transversal photomagnetic effect is apparently produced by deflection of the current carriers moving in the direction of the photomagnetic electromotoric force.

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KIKOIN, I.K.

SUBJECT: USSR/Physics of Magnetic Phenomena 48-6-4/23

AUTHOR: Kikoin, I.K. and Bykovskiy, Yu.A.

TITLE: On the Transverse Photomagnetic Effect in n- and p-Germanium (O poperechnom fotomagnitnom effekte v n- i p-germanii)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1957, Vol. 21, # 6, p 801 (USSR)

ABSTRACT: The so-called transverse photomagnetic effect was investigated in single crystals of germanium. This effect, which arises in semiconductors during their illumination in a magnetic field, is proportional to the square of the field intensity and depends on the angle between the normal to the plane of a sample and the magnetic field direction.

A dependence of the transverse photomagnetic e.m.f. on the magnetic field and the temperature was established.

It was shown that in p-germanium the transverse photomagnetic e.m.f. reverses its sign at sufficiently intensive fields.

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Kikoin, I. K.

20-3-9/46

AUTHORS: Kikoin, I. K., Academician, Bykovskiy, Yu. A.

TITLE: On the Anisotropy of the Even (Transverse) Photomagnetic Effect in Germanium Monocrystals (Ob anizotropii chetnogo (poperechnogo) fotomagnitnogo effekta v monokristallakh germaniya)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 3, pp. 361 - 364 (USSR)

ABSTRACT: The author showed in two preliminary studies (ref. Nr 1 and 2) that within semiconductors besides the ordinary photomagnetic effect still another photomagnetic effect exists. This other effect has been called a transverse photomagnetic effect. This effect consists of the following: With an illumination of the sample (a plane plate, arranged in a magnetic field, whereby the direction of the magnetic field includes a certain angle with the direction of the plate--plane) there appears in it an electric field (and a corresponding potential difference) which is directed vertical to the electric field of the ordinary photomagnetic effect. The difference of the potentials of the "transverse" photomagnetic effect does not modify the sign with the reversal of the field direction. Therefore it is more practical to call this effect further the even photomagnetic effect. The equation $V_g = AH^2 \sin 2\alpha$ applies to the potential difference caused by that even photomagnetic effect. Here de-

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20-3-9/46

On the Anisotropy of the Even (Transverse) Photomagnetic Effect in Germanium Monocrystals

note - H the magnetic field strength, α - the angle between the direction of the field H and the plane of the sample, A - the coefficient which depends on the light intensity, or the characteristics of the sample, on the condition of the surface, etc. The examination of this effect showed the following: It concerns a kind of Hall - (Kholl) - effect which is produced by an odd photomagnetic current. In germanium monocrystals the even photomagnetic effect is in many circumstances different from that, observed in polycrystalline copper oxydule. The angle dependence $V_g = AH^2 \sin 2\alpha$ does not apply to monocrystals. The experimentally obtained angle dependence for germanium monocrystals is here shown in a diagram. Such a strong angle dependence only can be defined by assumption of an essential anisotropy of the effect. Therefore the authors investigate the anisotropy of the even photomagnetic effect. Practically round targets are used for the investigation. The teeth cut out of the target served as electrodes. These samples were brought into a magnetic field and irradiated in vertical direction to this field. The carrying out of the experiment manifested an essential dependence of the potential difference on the angle φ. Here this dependence for a sample of n-germanium is demonstrated in a diagram. There is obviously no simple correlation between the

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SOV/89-5-3-8/15

AUTHORS: Kikoin, I. K., Dmitriyevskiy, V. A., Grigor'yev, I. [illegible], Kersnovskiy, S. V., Glazkov, [illegible], Dubovskiy, B. G.

TITLE: Test Reactor With Gaseous Fissile Material (UF_6) (Stendovyy reaktor s gazoobraznym delyashchimsya veshchestvom (UF_6))

PERIODICAL: Atomnaya energiya, 1958, Vol. 5, Nr 3, pp. 294-302 (USSR)

ABSTRACT: The reactor is of the heterogeneous type, the moderator consists of metallic beryllium (1 570 kg), and graphite is used as a reflector. The beryllium was available in form of cubes the edges of which had a length of 40 mm. The active zone is a cylinder of 1160 mm diameter and 1080 mm height. The gaseous (not enriched) uranium hexafluoride filled 148 channels which were arranged in form of a quadratic lattice with a spacing of 80 mm. The channels consisted of quadratic aluminum tubes of 40 . 40 . 1 mm. 4, 8, 10, 12, and 14 channels are arranged in a row, one beside the other. The working volume of a channel within the domain of the active zone is 1440 cm^3. The total volume of the active zone is 213 l. The lateral graphite reflector has a thickness of 500 mm, while the thickness of the

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upper and lower reflectors is 600 mm. 12 channels [illegible] 12 m diameter pass through the upper reflector; this makes it possible to feed the active zone with gas. A horizontal and 1 vertical channels are provided for regulation and switch-off. The reactor can be heated from the outside by means of an electrical aggregate of 35 kW. Heating the reactor to a temperature of 80 - 90° C takes 10 - 15 hours. The [illegible] located in a steel casing of 2 500 mm diameter. [illegible] hermetically sealed. Rubber gaskets are used for sealing. The system for the blowing-in and -out of gas consists [illegible] for uranium-hexafluoride, emergency cistern, a [illegible] apparatus, and remote-controlled valves. Reactor control is carried out by hand. The regulating rods are steel tubes with a diameter of 22 and 9 mm, which are filled with boron carbide. In August 1957 the reactor became critical for the first time, the quantity of gas amounting to 3 540 ± 40 g UF_6. The maximum power output hitherto attained [due to the biological shield] is 4.5 kW. With this power output a neutron flux of [illegible] $n \cdot cm^{-2}$ was measured in the center of the reactor. The radial distribution of the thermal neutron flux was measured and

Part 2 /

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plotted. For the reactivity ϱ the value

$$\varrho = 1,35.10^{-4} \Delta m g$$

was found. The dependence $\varrho(\tau)$ is plotted (τ denotes the time within which the neutron flux increases up to e-fold its amount). The temperature coefficient was measured and shown in form of a graph. The dissociation rate of the molecules UF_6 was determined as amounting to 0,32 mol/kWh. The addition of chlorotrifluoride shows that working conditions can be found in which stability of radiation of the uranium-hexafluoride in the reactor can be attained. A. M. Susova assisted in assembling the apparatus in collaboration with A. A. Krasin. There are 12 figures and 3 references, 1 of which is Soviet.

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KIKOIN, I.K.

21(1) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Ed.s: N.A. Dollezhal', Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, I.I. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Parfenov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alrab'yev; Tech. Ed.: Ye. I. Nasel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful uses of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Tu. I. Reykhin is the science editor of this volume. See SOV/2581 for titles of all volumes of the set. References appear at the end of the articles.

PART II. EXPERIMENTAL AND RESEARCH REACTORS

Leypunskiy, A.I., V.O. Orekhin, M.N. Aleksandrov, I.I. Bondarenko, O.D. Kazachkovskiy, O.I. Kobzarev, G.A. Pankov, Yu. Pikulenko, V.I. Matveyev, Ye. Stelletskiy, F.I. Shcherbakov, and L.N. Yurova (Report No. 2229) Experimental Fast Reactors in the USSR 215

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Kidyarov, V.A. Self-regulation in a Water-water Power Reactor (Report No. 2186) 534

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24 (3), 18 (6)

AUTHORS: Kikoin, I. K., Academician, Buryak, Ye. M., Muromkin, Yu. A.

SOV/20-125-5-16/61

TITLE: On the Anomalously High Hall-effect in the Ferromagnetic Alloy Chromium-tellurium (Ob anomal'no bol'shom effekte Kholla v ferromagnitnom splave khrom-tellur)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1011-1014 (USSR)

ABSTRACT: In the investigation of the galvanomagnetic effects in ferromagnetic alloys consisting of non-ferromagnetic components, the authors observed an anomalously high ferromagnetic Hall-coefficient in the alloy chromium-tellurium (50 atom %). By ferromagnetic Hall-coefficient the authors mean the amount of the coefficient R_J defined by the equation $\vec{E} = R_J[\vec{J}\vec{j}] + R_o[\vec{H}\vec{j}]$. To this equation there corresponds the equation $U_H = R_J J\frac{i}{d} + R_o H\frac{i}{d}$. Here $\vec{E}$ denotes the electric field strength, U - the potential difference corresponding to it, which occurs in the sample with the amperage $\vec{j}$ under the

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influence of a transversal magnetic field $\vec{H}$ and the corresponding magnetization $\vec{J}$, d - the thickness of the sample, R_o - the "classical" Hall coefficient. For ordinary (non-ferromagnetic) metals the first term of the right sides of the two equations written down above are equal to zero. For the theory of galvanomagnetic effects investigation of each of the two coefficients R_J and R_o is of interest. In the present paper attention is concentrated upon R_J. In a table the value of R_j of the above mentioned chromium-tellurium alloy is compared with the value of this coefficient for other ferromagnetics. In view of the temperature dependence of R_J the comparison is carried out for equal values of the reduced temperature T/Θ, where Θ denotes Curie temperature. For the above mentioned alloy it holds that $\Theta = 54^\circ$ (according to measurement of the magnetocaloric effect). As far as the authors know such a high ferromagnetic Hall coefficient (100 times as high as in the case of iron) is observed for the first time. Particular interest is caused by the temperature dependence of the Hall

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effect and especially by its measurement when passing through the Curie point. The relatively low Curie temperature and the high Hall effect render the here investigated alloy especially suited for such investigations. The authors therefore investigate the temperature dependence of the Hall effect in the alloy Cr-Te below as well as above Curie point. (From the temperature of liquid nitrogen to 300°). The present paper describes the most important results obtained firstly with respect to the Hall effect below Curie point. A diagram shows the dependence of the difference of Hall potentials U_{Hi}^{d} on the magnetic field strength H at various temperatures. R_J is directly connected with the square J_{sp}^2 of spontaneous magnetization. The observed temperature dependence of R_J is probably due to the temperature dependence of the spontaneous magnetization J_{sp}. It holds that $R_J = a(\beta - J_{sp}^2)$. The constant β agrees with sufficient accuracy with J_o^2, the

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square of spontaneous magnetization at absolute zero. Thus, it holds that $R_J = a(J_o^2 - J_{sp}^2)$. Above Curie point the difference U_H of Hall's potentials is proportional to the magnetic field strength and also in the ordinary metals: $U_H = RH\frac{i}{d}$. The authors in the aforementioned alloy check the correctness of the previously found relation (Ref 7) $U_H = R_p \chi H\frac{i}{d} + R_1 H\frac{i}{d}$ or $R = R_p \chi + R_1$. Here χ denotes magnetic susceptibility and R_p the paramagnetic Hall-coefficient. The "paramagnetic" component of the Hall coefficient actually obeys the Curie-Weiss law. There are 4 figures, 1 table, and 7 references, 3 of which are Soviet.

SUBMITTED: January 24, 1958

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S/126/60/010/003/007/009/XX
E032/E314

AUTHORS: Kikoin, I.K., Babushkina, N.A. and Igosheva, T.N.

TITLE: Galvanomagnetic Phenomena in the Ferromagnetic Alloy MnSb

PERIODICAL: Fizika metallov i metallovedeniy, 1960, Vol. 10, No. 3, pp. 488 - 490

TEXT: It is said that no satisfactory theory of galvanomagnetic effects in ferromagnetics is available at the present time. This is largely due to the lack of experimental data in this important field. The present authors have investigated the temperature dependence of the Hall coefficient and the electrical resistivity of MnSb alloys (50 at.%). The same specimens were used to measure the temperature dependence of the magnetisation curves and the magnetocaloric effect. Fig. 1 shows the ferromagnetic Hall coefficient R_J as a function of the square of the spontaneous magnetisation (the units of R_J are V g/amp gauss cm^2 and the units of

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Galvanomagnetic Phenomena in the Ferromagnetic Alloy MnSb

σ_s^2 are gauss^{2}cm^6/g^2). If R_J is represented by a formula of the form

$$R_J = a(\sigma_0^2 - \sigma_s^2) \qquad (2)$$

then it is found that σ_o = 111.76 gauss/cm^3/g. It is known (Kikoin et al, Ref. 1) that a similar formula holds for chromium-tellurium alloys. Eq. (2) can also be derived from the theory of galvanomagnetic effects in ferromagnetics as given oy Vonsovskiy et al (Ref. 2) and Patrakhin (Ref. 3). The equation can be used to establish a relation between the ferromagnetic Hall coefficient and the electrical resistivity ρ. This relation differs from the Karplus--Luttinger (Ref. 4) relation

$$R_J = A\rho^2 \qquad (3)$$

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Galvanomagnetic Phenomena in the Ferromagnetic Alloy MnSb

which does not agree with experiment. The present authors use the relation

$$R_j = \alpha - \beta\Delta\rho \qquad (5)$$

where $\Delta\rho$ is the ferromagnetic part of the resistivity. An experimental plot of R_j versus $\Delta\rho$ is shown in Fig. 2. Agreement with Eq. (5) is seen to be satisfactory. A more detailed description of experiments and results will be published later. There are 2 figures and 5 references: 3 Soviet and 2 non-Soviet.

SUBMITTED: June 17, 1960

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Galvanomagnetic Phenomena in the Ferromagnetic Alloy MnSb

Fig.1

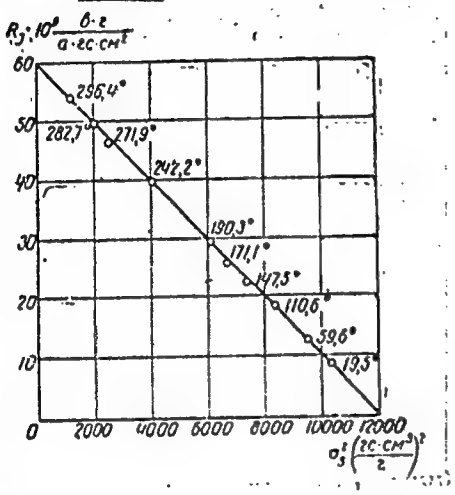

Fig.2

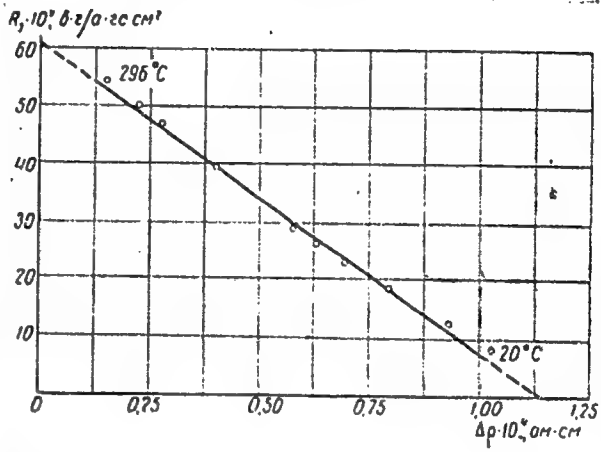

Рис. 2.

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KIKOIN, I.K.; BABUSHKINA, N.A.; IGOSHEVA, T.N.

Magnetic changes in the resistance of ferromagnetics above the Curie point. Zhur. eksp. i teor. fiz. 39 no.4:1172-1174 O '60. (MIRA 13:11)

(Ferromagnetism)

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24.3600 (1106, 1114, 1160)

AUTHORS: Kikoin, I. K., Lazarev, S. D.

TITLE: Anisotropy of the Even Photomagnetic Effect in n-Type Germanium at Low Temperatures

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 5(11), pp. 1471 - 1473

TEXT: At room temperature the anisotropy of the even photomagnetic effect in germanium can be described fairly well with phenomenological equations of Yu. Kagan and Ya. A. Smorodinskiy in a field up to 20,000 oe but an investigation of the temperature dependence of the even photomagnetic effect at low temperatures showed that its anisotropy runs in an anomalous manner. The present "Letter to the Editor" reports about such investigations on an n-type germanium single crystal. The spherical sample was arranged so that the [111] axis coincided with the normal $\vec{n}$ of the irradiated surface. The field direction $\vec{H}$, the exposure direction, and the direction where the even photomagnetic e.m.f. was measured corresponded to the coordinate directions x,y,z. In the z-direction,

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besides an even, also an odd photomagnetic e.m.f. occurred which could be excluded by measuring in two different $\vec{H}$-directions. This even photomagnetic e.m.f. (E_q) can be described through the above mentioned phenomenological equation as

$E_q = \frac{1}{3\sqrt{2}} LH^2 \sin^2\theta . \cos 3\varphi$, where φ is the angle of rotation of the sample about $\vec{n}$, θ is the angle between $\vec{n}$ and z, L is a material constant. The sample was rotated about $\vec{n}$ and also about z (in order to change φ and θ). The formula describes quite well the experimental results as obtained at nitrogen temperature and at room temperature for the φ dependence of the even photomagnetic e.m.f. The θ dependence at 78°K is entirely different from that at room temperature. This dependence is illustrated in Fig.1. The extreme values of E_q are plotted on the ordinate and correspond to the values $\varphi = \pi/3, 2\pi/3, \ldots$. Fig. 2 shows E_q as a function of H at various θ.

There are 2 figures and 4 Soviet references.

SUBMITTED: August 20, 1960

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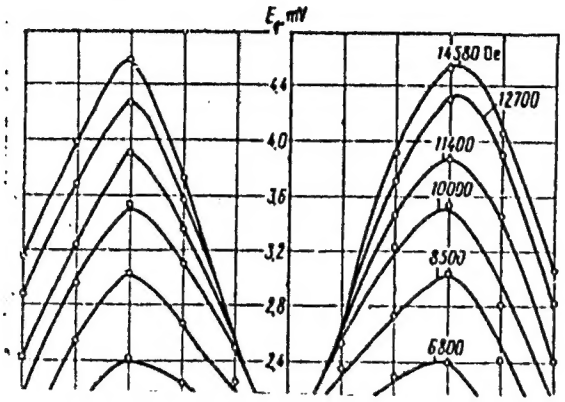

Fig.1

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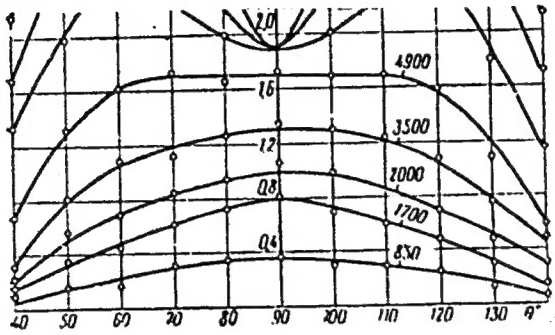

Fig. Enc. 1

Fig.1

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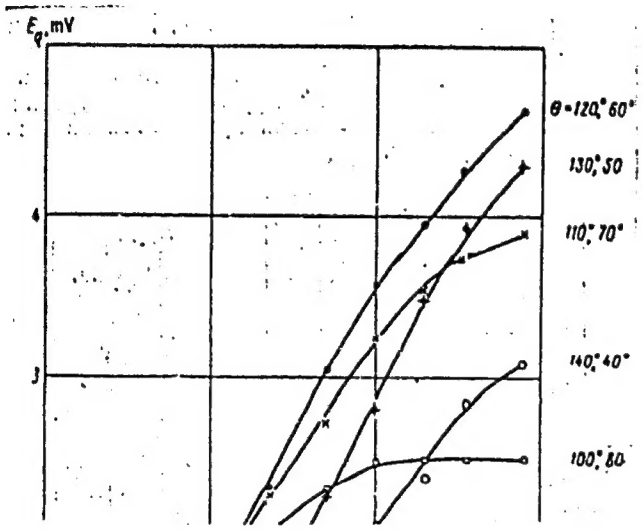

Fig. 2

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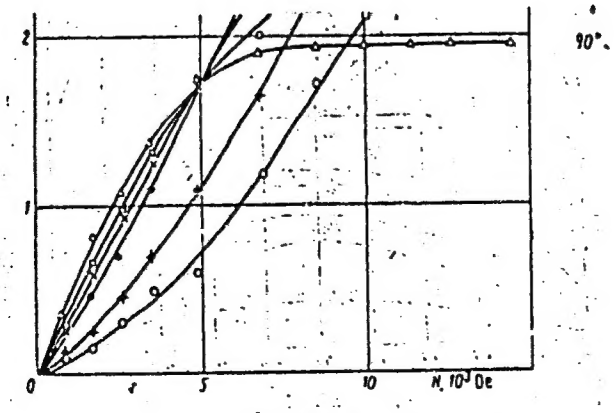

Fig. 2

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